Full wwPDB EM Validation Report ⓘ

Aug 31, 2024 – 01:24 PM EDT

PDB ID	:	8UI0
EMDB ID	:	EMD-42285
Title	:	Structure of poised transcription complex Pol II-DSIF-NELF - pre-translocated
Authors	:	Vos, S.M.; Su, B.G.
Deposited on	:	2023-10-09
Resolution	:	2.70 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:

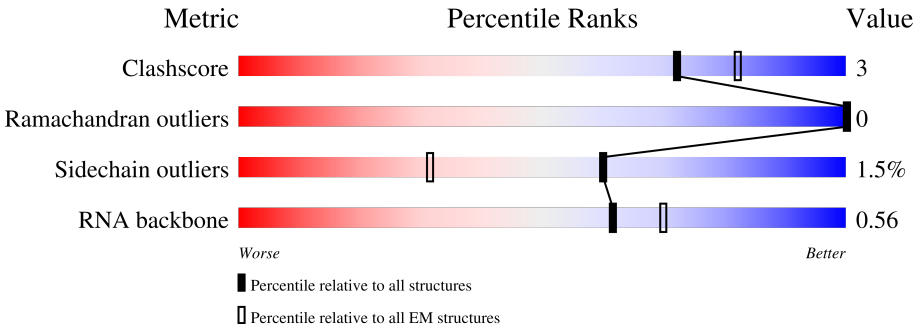
EMDB validation analysis	:	0.0.1.dev112
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.3

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 2.70 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	X	380	96%
2	V	554	55%, 86%, 13%
3	W	590	26%, 81%, 8%, 11%
4	A	1970	64%, 7%, 29%
5	B	1174	88%, 9%
6	C	271	88%, 6%, 6%
7	D	142	76%, 11%, 13%

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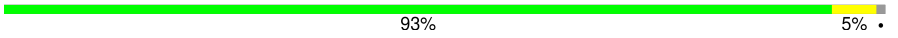
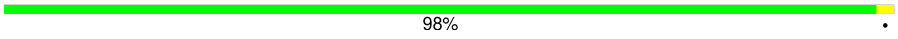
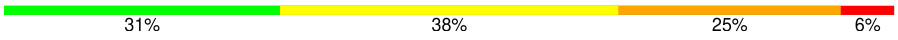
Mol	Chain	Length	Quality of chain
8	E	210	
9	F	127	
10	G	171	
11	H	150	
12	I	125	
13	J	67	
14	K	115	
15	L	58	
16	N	50	
17	P	16	
18	T	38	
19	U	527	
20	Z	1087	

2 Entry composition

There are 22 unique types of molecules in this entry. The entry contains 89334 atoms, of which 44428 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 Negative elongation factor E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
1	X	15	283	85	159	23	16	0	0

- Molecule 2 is a protein called Negative elongation factor B.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
2	V	550	8912	2825	4501	751	811	24	0	0

- Molecule 3 is a protein called Negative elongation factor C/D.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
3	W	526	8362	2673	4183	698	784	24	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
4	A	1399	22302	6976	11207	1985	2064	70	0	0

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

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
5	B	1136	18192	5739	9116	1597	1676	64	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
6	C	254	4027	1282	1989	348	402	6	0	0

- Molecule 7 is a protein called RNA polymerase Rpb4/RPC9 core domain-containing protein.

Mol	Chain	Residues	Atoms						AltConf	Trace
7	D	124	Total	C	H	N	O	S	0	0
			2016	632	1004	173	203	4		

- Molecule 8 is a protein called DNA-directed RNA polymerase II subunit E.

Mol	Chain	Residues	Atoms						AltConf	Trace
8	E	207	Total	C	H	N	O	S	0	0
			3438	1083	1729	298	320	8		

- Molecule 9 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms						AltConf	Trace
9	F	77	Total	C	H	N	O	S	0	0
			1271	397	653	105	111	5		

- Molecule 10 is a protein called DNA-directed RNA polymerase subunit.

Mol	Chain	Residues	Atoms						AltConf	Trace
10	G	171	Total	C	H	N	O	S	0	0
			2710	875	1358	219	250	8		

- Molecule 11 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms						AltConf	Trace
11	H	148	Total	C	H	N	O	S	0	0
			2333	750	1147	194	237	5		

- Molecule 12 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms						AltConf	Trace
12	I	114	Total	C	H	N	O	S	0	0
			1787	571	859	166	180	11		

- Molecule 13 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms						AltConf	Trace
13	J	66	Total	C	H	N	O	S	0	0
			1064	339	540	88	91	6		

- Molecule 14 is a protein called DNA-directed RNA polymerase II subunit RPB11-a.

Mol	Chain	Residues	Atoms						AltConf	Trace
14	K	115	Total	C	H	N	O	S	0	0
			1863	593	942	152	174	2		

- Molecule 15 is a protein called RNA polymerase II subunit K.

Mol	Chain	Residues	Atoms						AltConf	Trace
15	L	44	Total	C	H	N	O	S	0	0
			751	231	378	72	64	6		

- Molecule 16 is a DNA chain called DNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
16	N	27	Total	C	H	N	O	P	0	0
			856	263	305	97	164	27		

- Molecule 17 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
17	P	16	Total	C	H	N	O	P	0	0
			508	151	170	55	116	16		

- Molecule 18 is a DNA chain called DNA (38-MER).

Mol	Chain	Residues	Atoms						AltConf	Trace
18	T	38	Total	C	H	N	O	P	0	0
			1209	371	427	148	225	38		

- Molecule 19 is a protein called Negative elongation factor A.

Mol	Chain	Residues	Atoms						AltConf	Trace
19	U	196	Total	C	H	N	O	S	0	0
			3054	953	1556	253	284	8		

- Molecule 20 is a protein called Transcription elongation factor SPT5.

Mol	Chain	Residues	Atoms						AltConf	Trace
20	Z	274	Total	C	H	N	O	S	0	0
			4387	1373	2205	393	405	11		

- Molecule 21 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

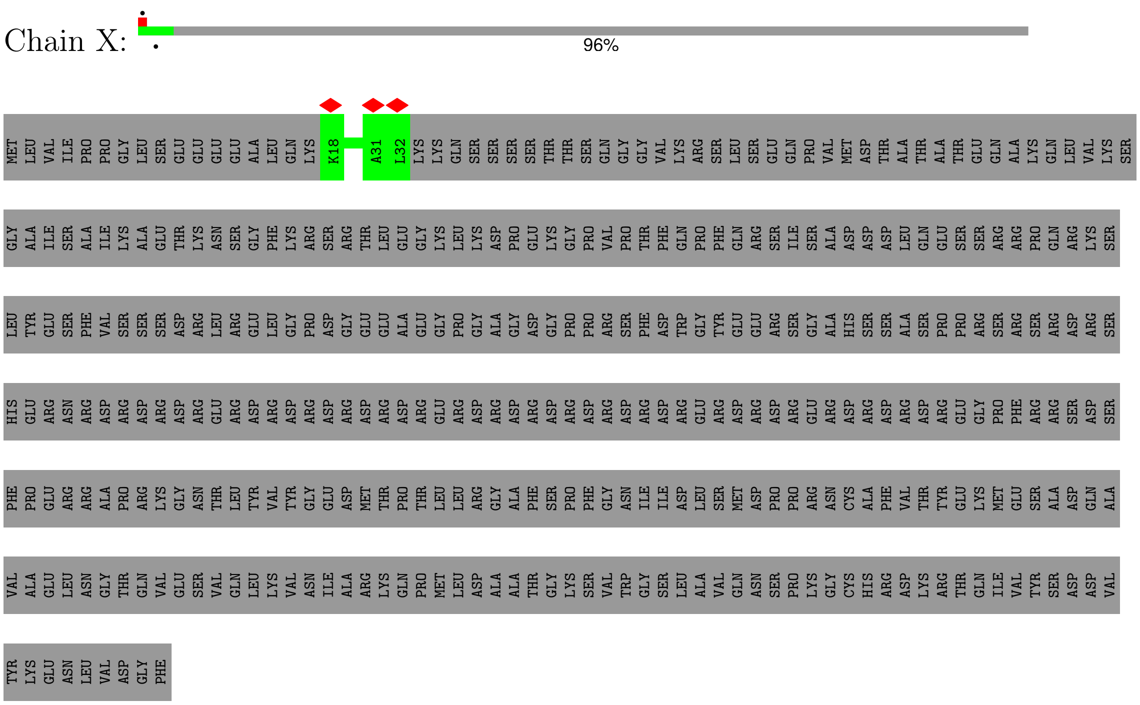
- Molecule 22 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

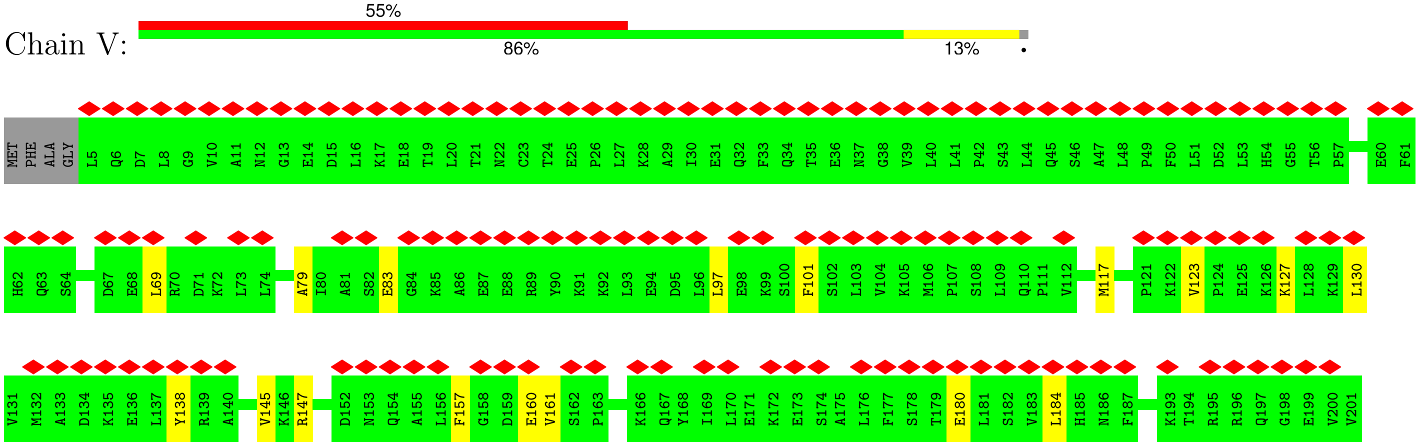
3 Residue-property plots (i)

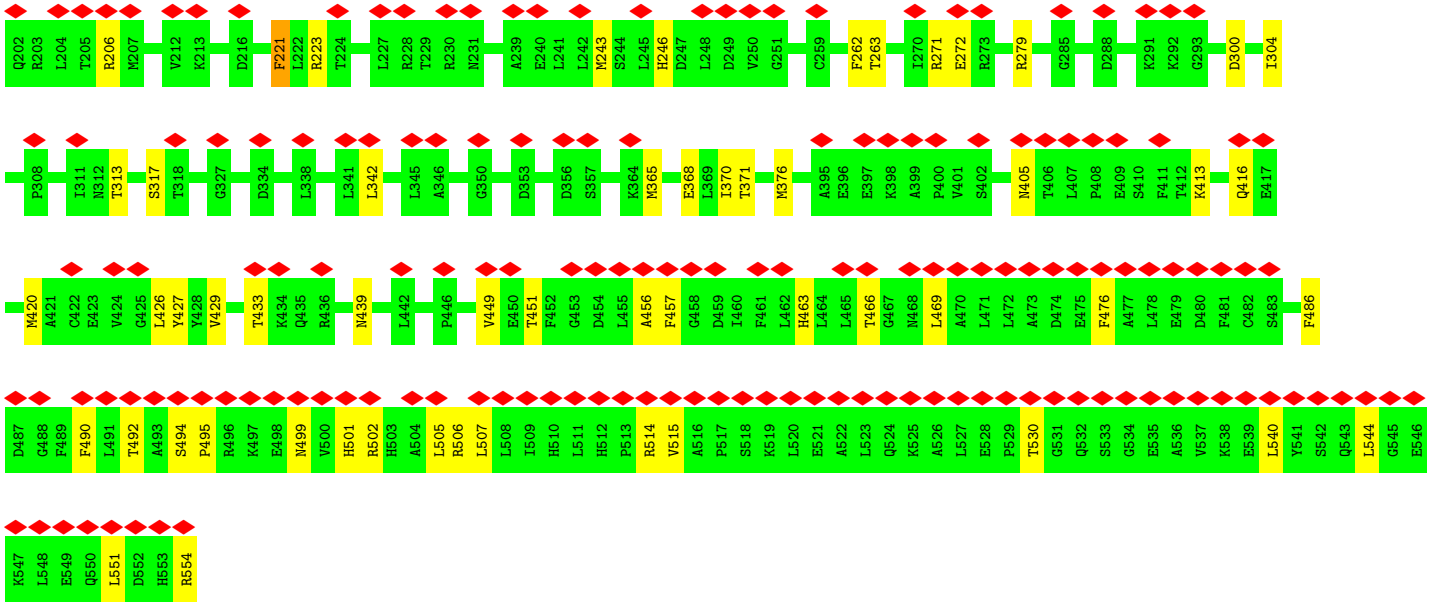
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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



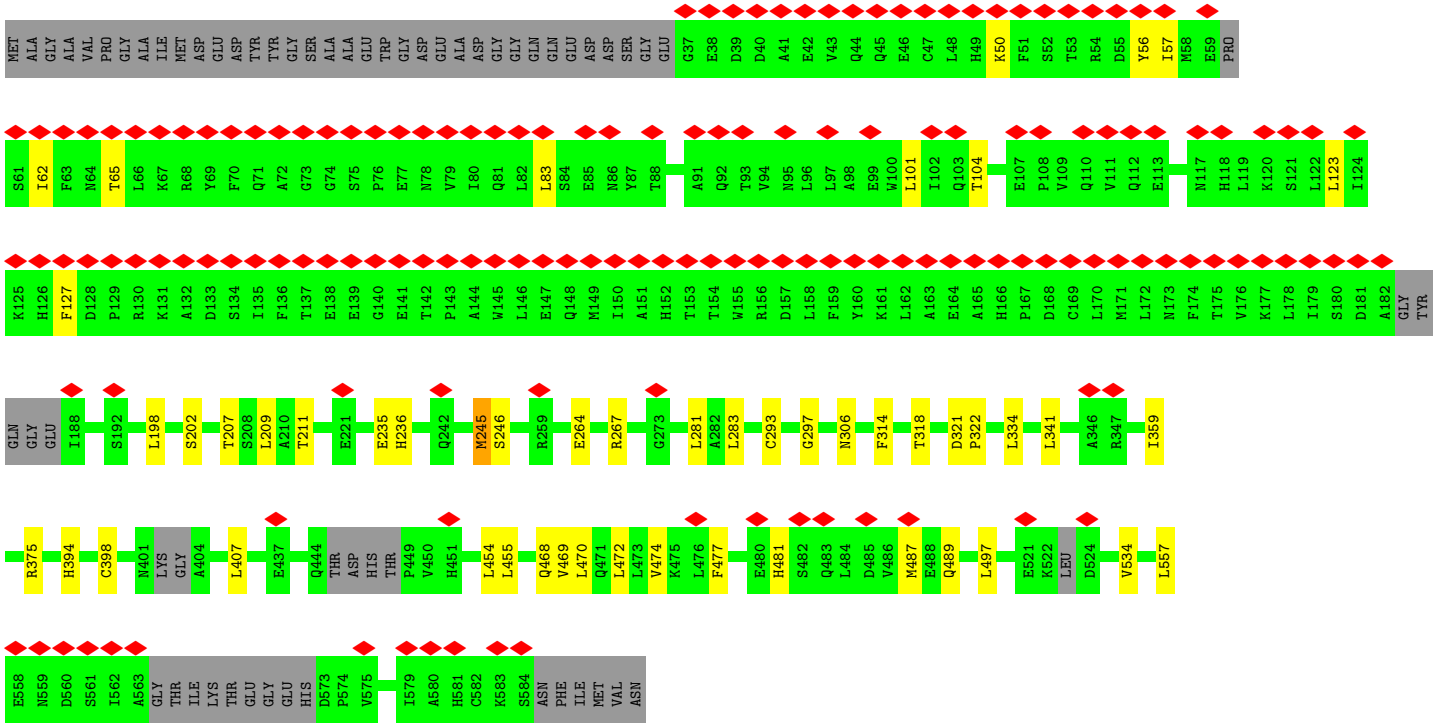
- Molecule 2: Negative elongation factor B





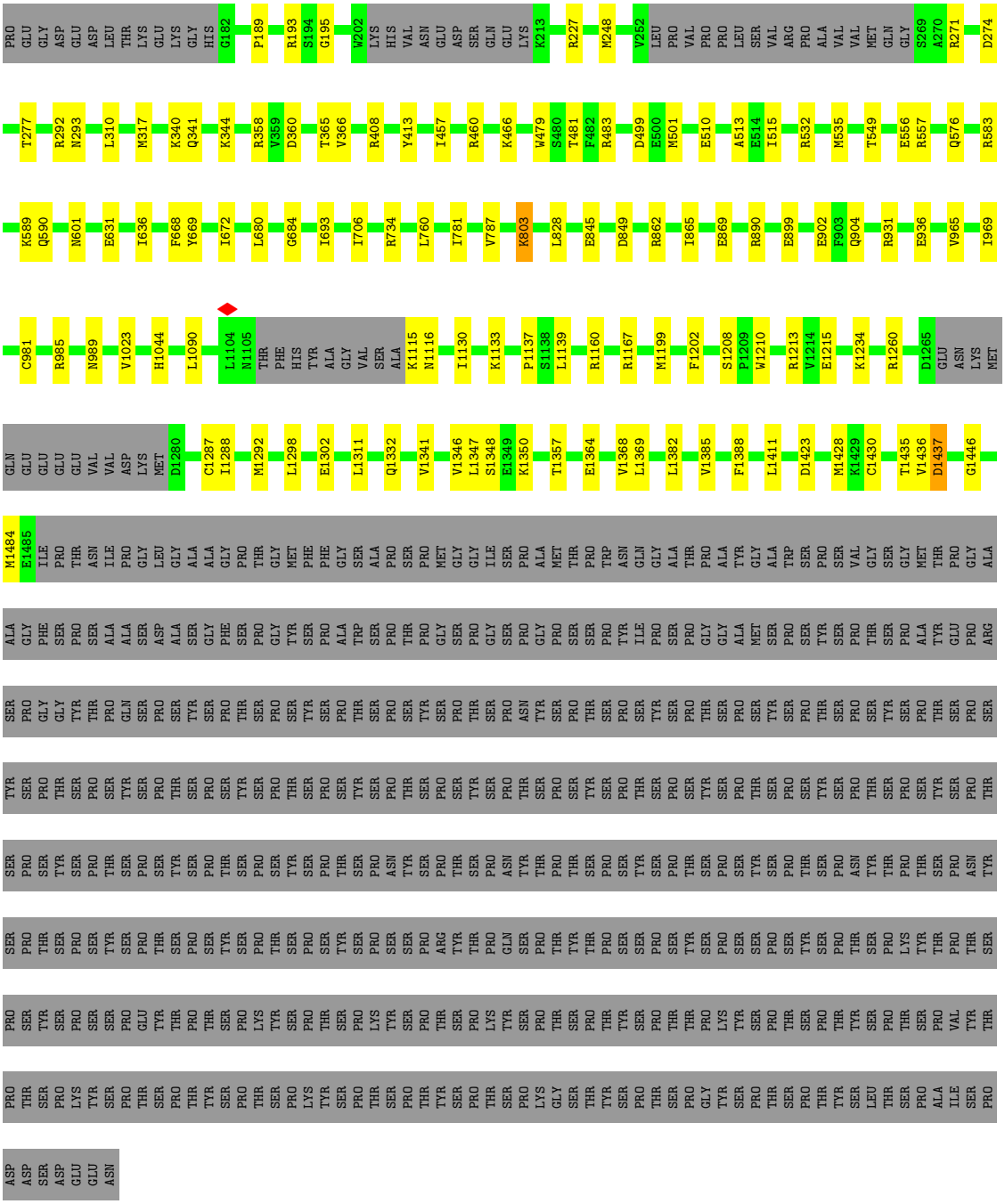
• Molecule 3: Negative elongation factor C/D

Chain W:



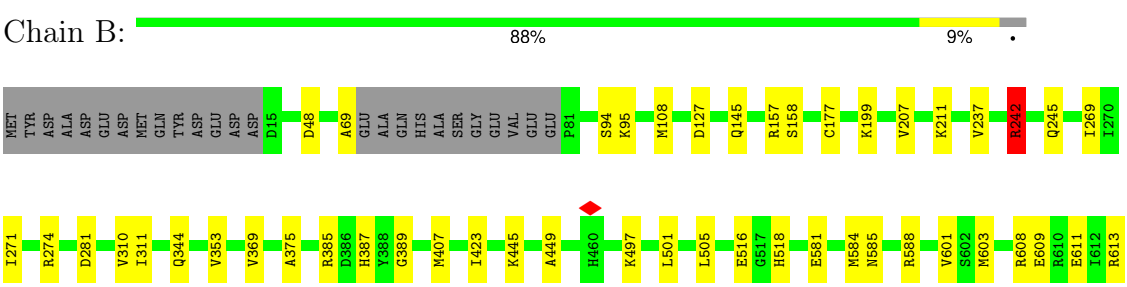
• Molecule 4: DNA-directed RNA polymerase subunit

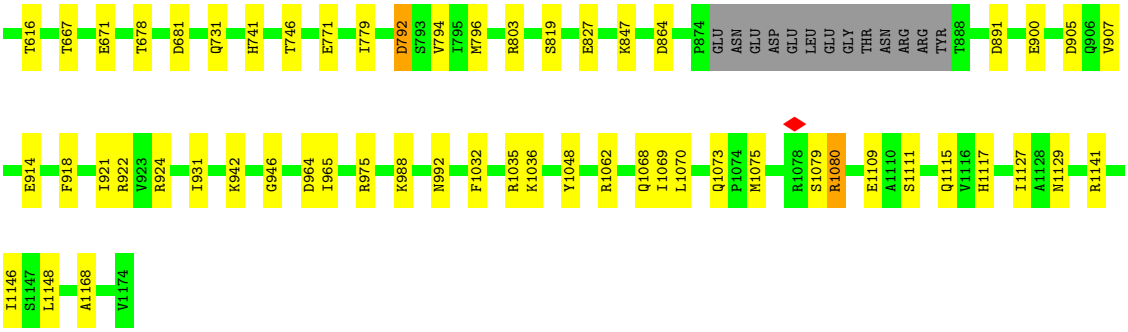
Chain A:



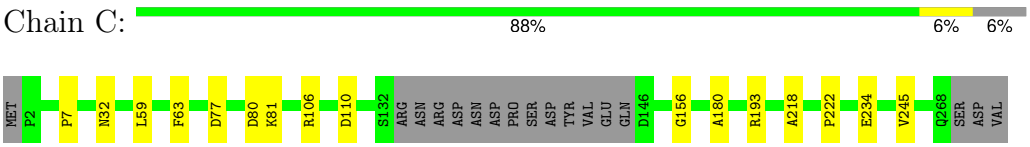
• Molecule 5: DNA-directed RNA polymerase subunit beta

Chain B:

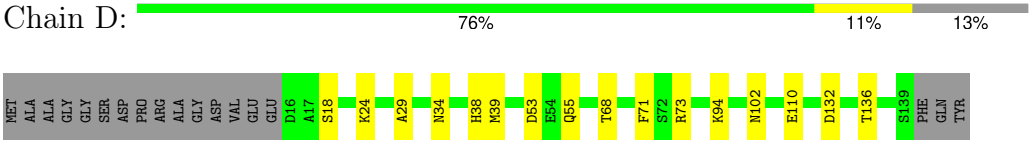




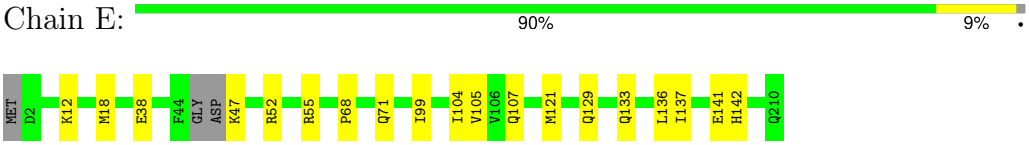
• Molecule 6: DNA-directed RNA polymerase II subunit RPB3



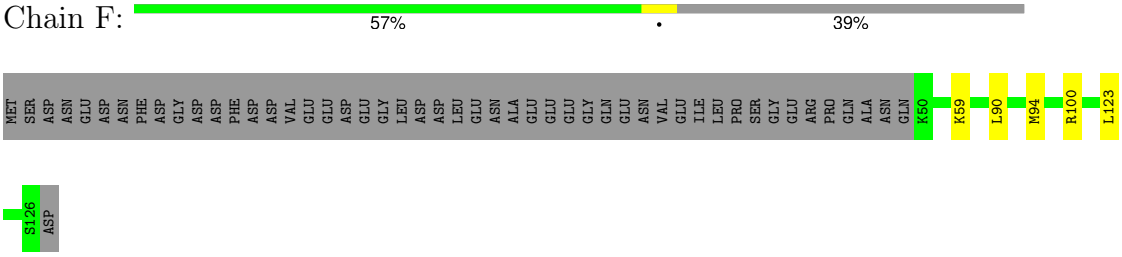
• Molecule 7: RNA polymerase Rpb4/RPC9 core domain-containing protein



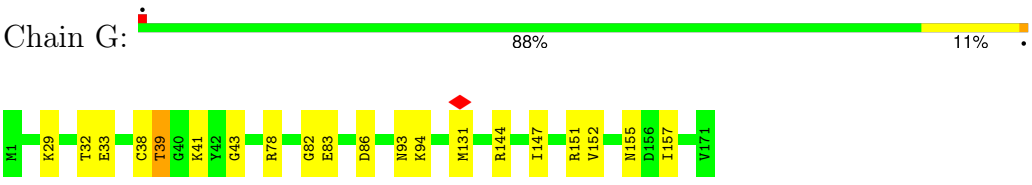
• Molecule 8: DNA-directed RNA polymerase II subunit E



• Molecule 9: DNA-directed RNA polymerases I, II, and III subunit RPABC2

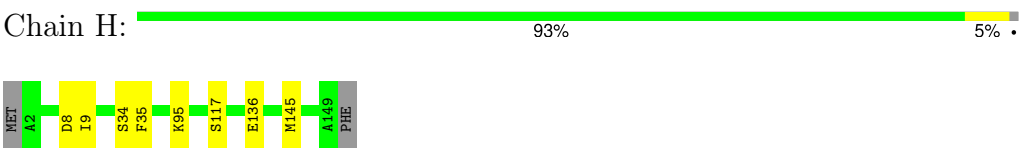


• Molecule 10: DNA-directed RNA polymerase subunit



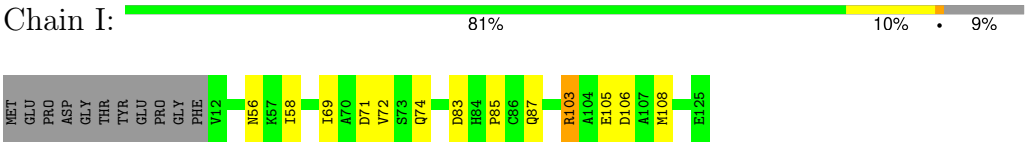
• Molecule 11: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain H:



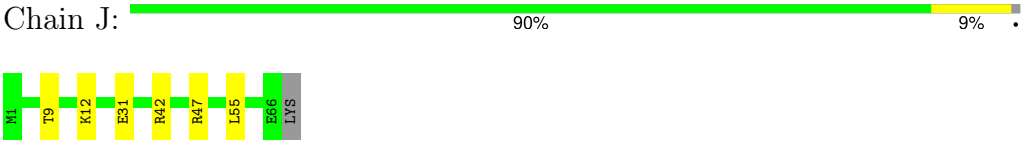
• Molecule 12: DNA-directed RNA polymerase II subunit RPB9

Chain I:



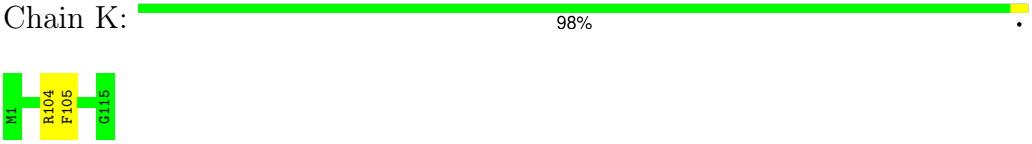
• Molecule 13: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J:



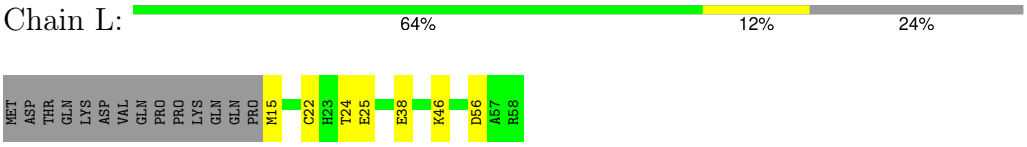
• Molecule 14: DNA-directed RNA polymerase II subunit RPB11-a

Chain K:



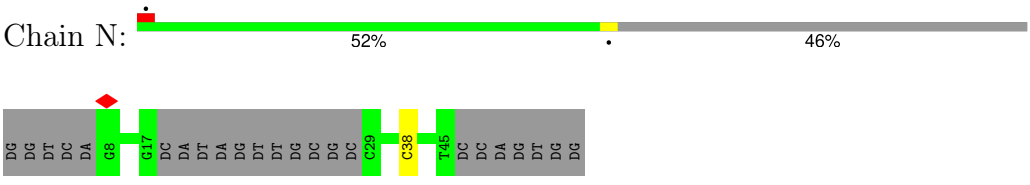
• Molecule 15: RNA polymerase II subunit K

Chain L:



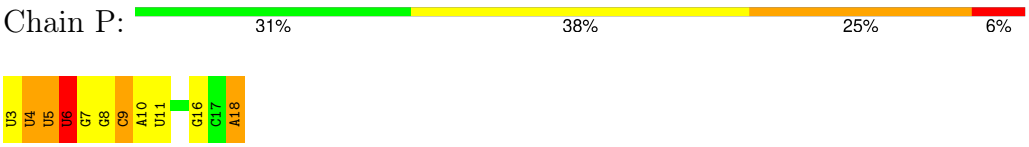
• Molecule 16: DNA

Chain N:



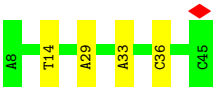
• Molecule 17: RNA

Chain P:



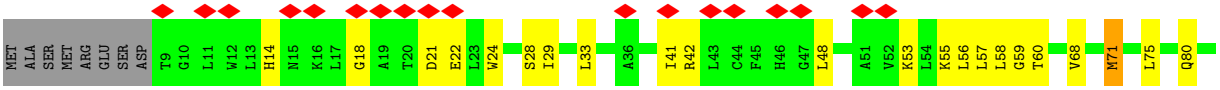
• Molecule 18: DNA (38-MER)

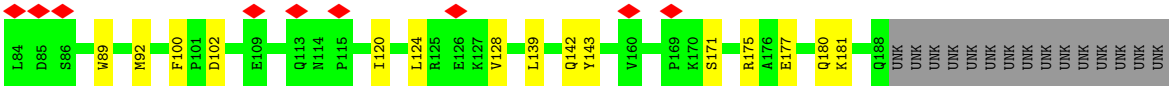
Chain T:

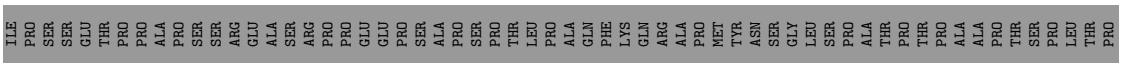


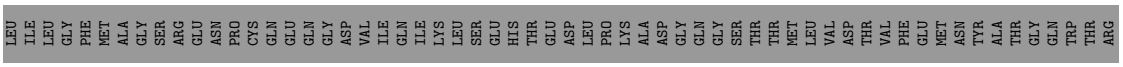
• Molecule 19: Negative elongation factor A

Chain U:



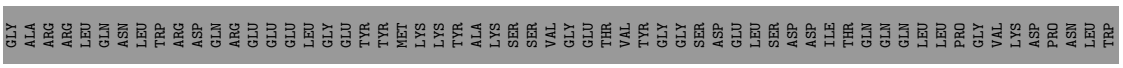


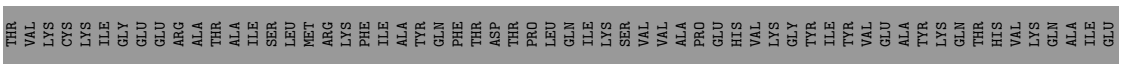


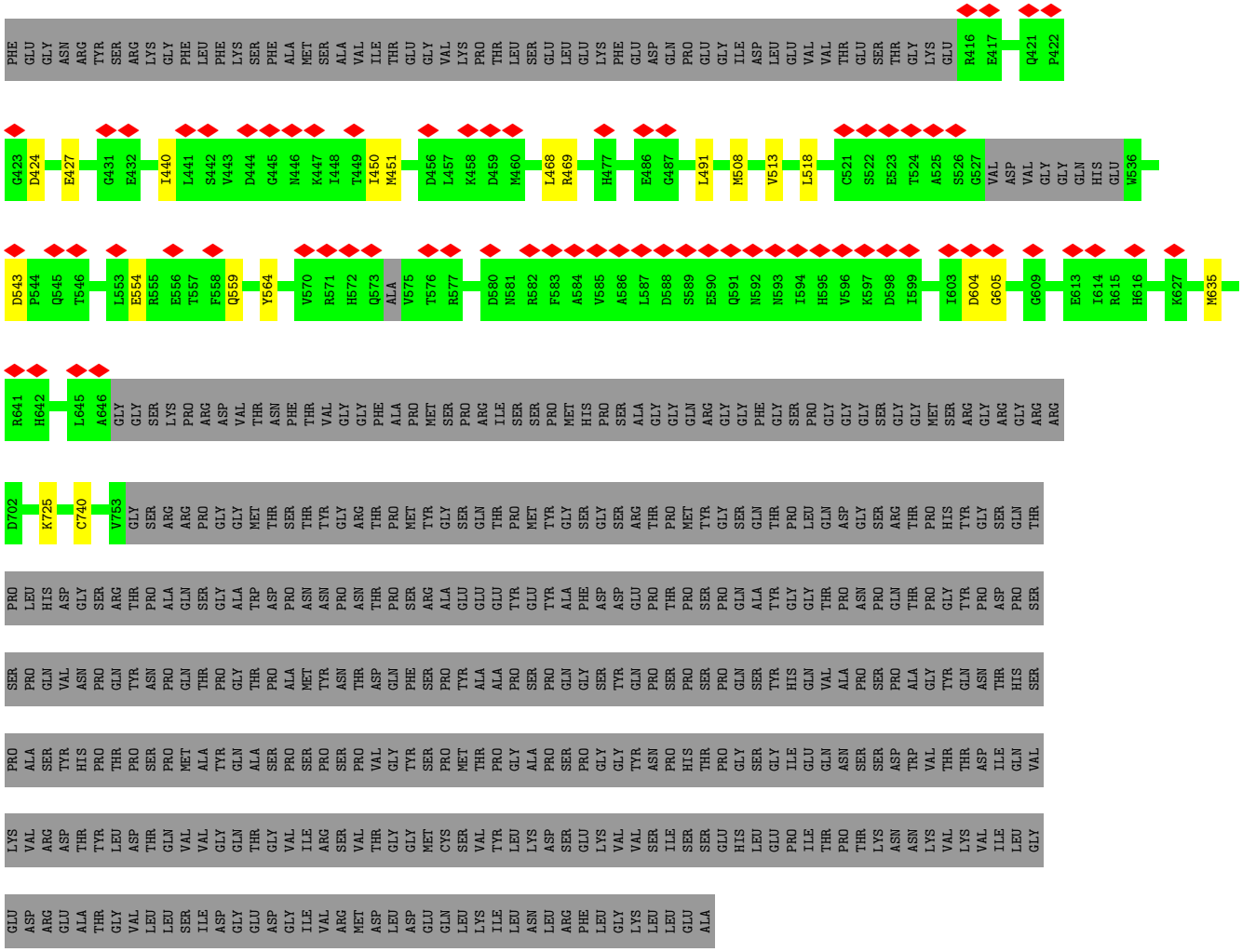


• Molecule 20: Transcription elongation factor SPT5

Chain Z:






PHE GLU GLY ASN ARG TYR SER ARG LYS GLY PHE LEU PHE LYS SER PHE ALA MET SER ALA VAL ILE THR GLU GLY VAL LYS PRO THR LEU SER GLU LEU GLU LYS PHE GLU ASP GLN PRO GLU GLY ILE ASP LEU GLU VAL VAL THR GLU SER THR GLY LYS GLU R416 E417 Q421 P422
G423 D424 E427 G431 E432 T440 L441 S442 V443 D444 G445 N446 K447 I448 T449 I450 M451 D456 L457 K458 D459 M460 L468 R469 H477 E486 G487 L491 H508 V513 L518 C521 S522 E523 T524 A525 S526 G527 VAL ASP VAL GLY GLY GLN HIS GLU W536
D543 P544 Q545 T546 L553 E554 R555 E556 T557 F558 Q559 Y564 V570 R571 H572 Q573 ALA V575 T576 R577 D580 N581 R582 F583 A584 V585 A586 L587 D588 S589 E590 Q591 N592 N593 I594 H596 V596 K597 D598 I599 I603 D604 G605 G609 E613 I614 R615 H616 K627 M635
R641 H642 L645 A646 GLY GLY SER LYS PRO ARG ASP VAL THR ASN PHE THR VAL GLY GLY PHE ALA PRO MET SER PRO ARG ILE SER SER PRO MET HIS PRO SER ALA GLY GLY GLN ARG GLY GLY PHE GLY SER PRO GLY GLY GLY SER GLY GLY MET SER ARG GLY ARG GLY ARG ARG
D702 K725 C740 V753 GLY SER ARG ARG PRO GLY GLY MET THR SER THR TYR GLY ARG THR PRO MET TYR GLY SER GLN THR PRO MET TYR GLY SER GLY SER ARG THR PRO MET TYR GLY SER GLN THR PRO LEU GLN ASP GLY SER ARG THR PRO HIS TYR GLY SER GLN THR
PRO LEU HIS ASP GLY SER ARG THR PRO ALA GLN SER GLY ALA TRP ASP PRO ASN ASN PRO ASN THR PRO SER ARG ALA GLU GLU GLU TYR GLU TYR ALA PHE ASP ASP GLU PRO THR PRO SER PRO GLN ALA TYR GLY GLY THR PRO ASN PRO GLN THR PRO GLY TYR PRO ASP PRO
SER PRO GLN VAL ASN PRO GLN TYR ASN PRO GLN THR PRO GLY THR PRO ALA MET TYR ASN THR ASP GLN PHE SER PRO TYR ALA ALA PRO SER PRO GLN GLY SER TYR GLN PRO SER PRO GLN SER TYR HIS GLN VAL ALA PRO SER PRO ALA GLY TYR GLN ASN THR HIS SER
PRO ALA SER TYR HIS PRO THR PRO SER PRO MET ALA TYR GLN ALA SER PRO SER PRO SER PRO VAL GLY TYR SER PRO MET THR PRO GLY ALA PRO SER PRO GLY GLY TYR ASN PRO HIS THR PRO GLY SER ILE GLU GLN ASN SER SER ASP TRP VAL THR THR ASP ILE GLN VAL
LYS VAL ARG ASP THR TYR LEU ASP THR GLN VAL VAL GLY GLN THR GLY VAL ILE ARG SER VAL THR GLY GLY MET CYS SER VAL TYR LEU LYS ASP SER GLU LYS VAL VAL SER ILE SER SER GLU HIS LEU GLU PRO ILE THR PRO THR LYS ASN ASN LYS VAL LYS VAL ILE LEU GLY
GLU ASP ARG GLU ALA THR GLY VAL LEU LEU SER ILE ASP GLY GLU ASP GLY ILE VAL ARG MET ASP LEU ASP GLU GLN LEU LYS ILE LEU ASN LEU ARG PHE LEU GLY LYS LEU LEU GLU ALA

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	90283	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 ($e^-/Å^2$)	51	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.739	Depositor
Minimum map value	-0.921	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.085	Depositor
Recommended contour level	0.35	Depositor
Map size (Å)	420.864, 420.864, 420.864	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.822, 0.822, 0.822	Depositor

5 Model quality

5.1 Standard geometry

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	X	0.37	0/124	0.60	0/159
2	V	0.34	0/4496	0.69	3/6074 (0.0%)
3	W	0.31	0/4261	0.60	0/5777
4	A	0.30	0/11294	0.67	2/15241 (0.0%)
5	B	0.30	0/9257	0.65	0/12493
6	C	0.29	0/2081	0.64	1/2828 (0.0%)
7	D	0.30	0/1025	0.61	0/1376
8	E	0.32	0/1739	0.70	1/2347 (0.0%)
9	F	0.30	0/628	0.67	0/848
10	G	0.33	0/1383	0.64	0/1874
11	H	0.30	0/1207	0.66	0/1628
12	I	0.34	0/949	0.73	1/1284 (0.1%)
13	J	0.34	0/533	0.69	0/719
14	K	0.31	0/940	0.59	0/1271
15	L	0.37	0/378	0.86	1/500 (0.2%)
16	N	0.85	0/615	1.08	0/944
17	P	0.34	0/376	1.15	4/583 (0.7%)
18	T	0.81	1/878 (0.1%)	1.06	2/1353 (0.1%)
19	U	0.31	0/1521	0.63	0/2063
20	Z	0.27	0/2214	0.63	1/2979 (0.0%)
All	All	0.34	1/45899 (0.0%)	0.68	16/62341 (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
4	A	0	1
5	B	0	1
12	I	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
19	U	0	1
All	All	0	4

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
18	T	36	DC	C1'-N1	6.83	1.58	1.49

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	C	110	ASP	CB-CG-OD1	9.24	126.61	118.30
4	A	849	ASP	CB-CG-OD1	8.00	125.50	118.30
15	L	56	ASP	CB-CG-OD2	7.89	125.41	118.30
2	V	221	PHE	CB-CG-CD2	7.67	126.17	120.80
4	A	1423	ASP	CB-CG-OD2	7.29	124.86	118.30
17	P	9	C	C2-N1-C1'	7.02	126.52	118.80
2	V	262	PHE	CB-CG-CD1	6.41	125.28	120.80
18	T	29	DA	O5'-P-OP1	6.24	118.19	110.70
20	Z	508	MET	CA-CB-CG	5.91	123.34	113.30
12	I	83	ASP	CB-CG-OD2	5.78	123.50	118.30
8	E	18	MET	CG-SD-CE	5.77	109.43	100.20
17	P	4	U	C5-C6-N1	5.77	125.58	122.70
2	V	221	PHE	CB-CG-CD1	-5.49	116.96	120.80
17	P	6	U	P-O3'-C3'	5.09	125.81	119.70
17	P	9	C	C6-N1-C1'	-5.05	114.73	120.80
18	T	36	DC	C2-N1-C1'	5.03	124.34	118.80

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	A	532	ARG	Sidechain
5	B	242	ARG	Sidechain
12	I	103	ARG	Sidechain
19	U	42	ARG	Sidechain

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	X	124	159	159	0	0
2	V	4411	4501	4501	46	0
3	W	4179	4183	4181	33	0
4	A	11095	11207	11207	81	0
5	B	9076	9116	9116	62	0
6	C	2038	1989	1989	11	0
7	D	1012	1004	1004	10	0
8	E	1709	1729	1729	12	0
9	F	618	653	653	3	0
10	G	1352	1358	1358	11	0
11	H	1186	1147	1147	5	0
12	I	928	859	859	8	0
13	J	524	540	540	5	0
14	K	921	942	942	2	0
15	L	373	378	378	4	0
16	N	551	305	307	1	0
17	P	338	170	170	5	0
18	T	782	427	427	2	0
19	U	1498	1556	1556	21	0
20	Z	2182	2205	2205	10	0
21	A	2	0	0	0	0
21	B	1	0	0	0	0
21	C	1	0	0	0	0
21	I	2	0	0	0	0
21	J	1	0	0	0	0
21	L	1	0	0	0	0
22	A	1	0	0	0	0
All	All	44906	44428	44428	287	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 3.

All (287) 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)
5:B:237:VAL:HG21	5:B:369:VAL:HG12	1.57	0.86
19:U:57:LEU:O	19:U:60:THR:OG1	2.06	0.74
7:D:73:ARG:NE	7:D:102:ASN:O	2.23	0.72
2:V:79:ALA:O	2:V:83:GLU:N	2.23	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:864:ASP:OD1	20:Z:725:LYS:NZ	2.25	0.69
3:W:481:HIS:O	3:W:489:GLN:NE2	2.27	0.68
3:W:322:PRO:O	3:W:375:ARG:NH1	2.26	0.68
4:A:576:GLN:O	4:A:590:GLN:NE2	2.26	0.68
15:L:15:MET:SD	15:L:15:MET:N	2.68	0.67
4:A:931:ARG:NH1	4:A:936:GLU:OE1	2.27	0.67
6:C:77:ASP:O	6:C:81:LYS:NZ	2.28	0.67
5:B:611:GLU:OE1	5:B:613:ARG:NH1	2.29	0.66
7:D:18:SER:OG	10:G:83:GLU:OE1	2.13	0.66
5:B:242:ARG:NH1	5:B:245:GLN:OE1	2.29	0.66
2:V:138:TYR:OH	2:V:160:GLU:OE1	2.09	0.66
4:A:27:SER:OG	4:A:29:ASP:OD1	2.06	0.65
19:U:68:VAL:HG13	19:U:75:LEU:HD12	1.78	0.64
4:A:513:ALA:HB2	9:F:90:LEU:HD21	1.79	0.64
2:V:490:PHE:O	2:V:494:SER:N	2.31	0.64
4:A:734:ARG:NH1	12:I:108:MET:SD	2.72	0.63
3:W:101:LEU:O	3:W:104:THR:OG1	2.15	0.63
4:A:510:GLU:OE1	4:A:510:GLU:N	2.30	0.63
2:V:466:THR:HG22	2:V:507:LEU:HD22	1.81	0.63
10:G:38:CYS:SG	10:G:39:THR:N	2.73	0.62
4:A:341:GLN:OE1	4:A:344:LYS:NZ	2.33	0.62
3:W:407:LEU:HD21	3:W:454:LEU:HD21	1.80	0.62
4:A:90:LEU:HD22	4:A:310:LEU:HD21	1.81	0.61
5:B:242:ARG:NH1	5:B:242:ARG:O	2.34	0.61
15:L:22:CYS:SG	15:L:24:THR:OG1	2.50	0.61
19:U:24:TRP:O	19:U:55:LYS:NZ	2.33	0.61
4:A:1234:LYS:NZ	4:A:1298:LEU:O	2.33	0.61
2:V:147:ARG:NH1	2:V:206:ARG:O	2.34	0.61
2:V:405:ASN:ND2	2:V:439:ASN:O	2.33	0.61
5:B:608:ARG:NH1	5:B:609:GLU:OE2	2.34	0.61
20:Z:427:GLU:OE2	20:Z:469:ARG:NH2	2.34	0.61
5:B:792:ASP:OD1	5:B:975:ARG:NH2	2.34	0.60
2:V:494:SER:OG	2:V:501:HIS:ND1	2.31	0.60
2:V:505:LEU:HD22	2:V:544:LEU:HD22	1.83	0.60
13:J:31:GLU:OE2	13:J:31:GLU:N	2.33	0.60
3:W:198:LEU:HD22	19:U:92:MET:HE2	1.82	0.60
3:W:321:ASP:OD1	3:W:375:ARG:NH2	2.35	0.60
4:A:803:LYS:N	5:B:671:GLU:OE1	2.35	0.60
5:B:771:GLU:O	13:J:55:LEU:HD21	2.02	0.59
4:A:481:THR:OG1	4:A:483:ARG:NH1	2.35	0.59
7:D:34:ASN:OD1	7:D:73:ARG:NH1	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:668:PHE:CZ	4:A:672:ILE:HD11	2.38	0.59
8:E:55:ARG:NH2	8:E:107:GLN:OE1	2.35	0.59
19:U:29:ILE:O	19:U:33:LEU:N	2.35	0.59
5:B:847:LYS:NZ	5:B:864:ASP:OD2	2.35	0.59
11:H:136:GLU:N	11:H:136:GLU:OE2	2.36	0.59
4:A:1364:GLU:O	4:A:1368:VAL:HG12	2.03	0.59
5:B:516:GLU:N	5:B:516:GLU:OE2	2.36	0.59
6:C:106:ARG:NH1	6:C:156:GLY:O	2.37	0.58
6:C:193:ARG:NH2	6:C:218:ALA:O	2.35	0.58
8:E:12:LYS:NZ	8:E:136:LEU:O	2.34	0.58
4:A:457:ILE:HD11	4:A:515:ILE:HD12	1.86	0.58
5:B:387:HIS:NE2	5:B:671:GLU:OE2	2.36	0.57
3:W:236:HIS:HB3	19:U:58:LEU:HD11	1.86	0.57
4:A:845:GLU:OE1	4:A:845:GLU:N	2.38	0.57
4:A:1311:LEU:HD22	4:A:1332:GLN:HG3	1.86	0.57
4:A:100:LEU:O	4:A:103:THR:OG1	2.19	0.57
2:V:97:LEU:HD22	2:V:117:MET:CE	2.35	0.57
4:A:693:ILE:HD13	4:A:828:LEU:HD21	1.86	0.57
17:P:5:U:O2'	17:P:6:U:O5'	2.22	0.57
4:A:22:GLN:NE2	4:A:1446:GLY:O	2.38	0.57
7:D:110:GLU:OE2	10:G:144:ARG:NH1	2.38	0.56
4:A:340:LYS:CG	4:A:1436:VAL:HG21	2.35	0.56
5:B:127:ASP:OD2	5:B:145:GLN:NE2	2.38	0.56
5:B:741:HIS:O	5:B:922:ARG:NH2	2.39	0.56
7:D:73:ARG:NH2	10:G:86:ASP:OD2	2.38	0.55
4:A:67:ARG:NH1	17:P:6:U:OP2	2.39	0.55
4:A:133:SER:O	4:A:140:ARG:NH2	2.39	0.55
7:D:132:ASP:O	7:D:136:THR:HG23	2.06	0.55
5:B:501:LEU:HD12	5:B:505:LEU:HD12	1.88	0.55
9:F:100:ARG:NH2	9:F:123:LEU:O	2.40	0.55
7:D:29:ALA:O	7:D:94:LYS:NZ	2.36	0.55
16:N:38:DC:N4	18:T:14:DT:O4	2.39	0.55
15:L:25:GLU:N	15:L:25:GLU:OE1	2.39	0.55
3:W:281:LEU:HD13	3:W:293:CYS:SG	2.47	0.55
4:A:631:GLU:OE1	11:H:95:LYS:NZ	2.34	0.54
2:V:426:LEU:HD21	2:V:456:ALA:HB2	1.89	0.54
8:E:141:GLU:N	8:E:141:GLU:OE1	2.41	0.54
2:V:97:LEU:HD11	2:V:127:LYS:CD	2.38	0.54
4:A:904:GLN:OE1	4:A:1044:HIS:NE2	2.41	0.54
4:A:869:GLU:OE1	4:A:869:GLU:N	2.40	0.53
4:A:358:ARG:O	5:B:1111:SER:OG	2.23	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:900:GLU:N	5:B:900:GLU:OE1	2.41	0.53
19:U:142:GLN:OE1	19:U:142:GLN:N	2.41	0.53
3:W:470:LEU:O	3:W:474:VAL:HG13	2.08	0.53
5:B:907:VAL:HG13	5:B:921:ILE:CD1	2.38	0.53
20:Z:424:ASP:HB2	20:Z:440:ILE:HD12	1.90	0.53
4:A:365:THR:OG1	4:A:366:VAL:N	2.41	0.53
4:A:193:ARG:NH1	4:A:195:GLY:O	2.43	0.52
5:B:48:ASP:OD1	5:B:158:SER:OG	2.27	0.52
5:B:907:VAL:HG22	5:B:921:ILE:HD12	1.92	0.52
2:V:342:LEU:HD12	2:V:420:MET:SD	2.49	0.52
5:B:581:GLU:OE1	12:I:74:GLN:NE2	2.43	0.52
5:B:94:SER:OG	5:B:95:LYS:N	2.42	0.52
3:W:264:GLU:OE1	3:W:267:ARG:NH1	2.44	0.52
19:U:177:GLU:O	19:U:181:LYS:NZ	2.34	0.52
3:W:62:ILE:HD11	3:W:83:LEU:HD21	1.91	0.51
4:A:680:LEU:O	4:A:684:GLY:N	2.42	0.51
2:V:97:LEU:HD22	2:V:117:MET:HE1	1.92	0.51
4:A:1302:GLU:OE1	4:A:1302:GLU:N	2.44	0.51
4:A:113:PHE:O	4:A:227:ARG:NH2	2.43	0.51
5:B:1032:PHE:O	6:C:32:ASN:ND2	2.43	0.51
2:V:263:THR:OG1	2:V:304:ILE:HD13	2.11	0.51
5:B:681:ASP:N	5:B:681:ASP:OD1	2.44	0.51
2:V:313:THR:O	2:V:317:SER:OG	2.24	0.51
4:A:26:LEU:HD13	5:B:1168:ALA:HB2	1.93	0.51
3:W:314:PHE:O	3:W:318:THR:OG1	2.22	0.51
19:U:14:HIS:O	19:U:18:GLY:N	2.44	0.50
4:A:902:GLU:OE1	4:A:985:ARG:NH2	2.45	0.50
4:A:706:ILE:HD11	4:A:787:VAL:HG21	1.94	0.50
3:W:123:LEU:O	3:W:127:PHE:N	2.44	0.50
5:B:1117:HIS:HB3	5:B:1146:ILE:HD11	1.93	0.50
4:A:668:PHE:CE1	4:A:672:ILE:HD11	2.46	0.50
3:W:235:GLU:HB3	19:U:58:LEU:HD13	1.93	0.50
5:B:1035:ARG:NH1	5:B:1036:LYS:O	2.45	0.50
2:V:463:HIS:O	2:V:466:THR:OG1	2.24	0.49
4:A:583:ARG:NH1	6:C:222:PRO:O	2.45	0.49
3:W:334:LEU:HD13	19:U:143:TYR:HD1	1.76	0.49
4:A:601:ASN:ND2	4:A:989:ASN:OD1	2.45	0.49
6:C:59:LEU:HD13	6:C:63:PHE:CD2	2.48	0.49
5:B:678:THR:OG1	5:B:681:ASP:OD1	2.30	0.49
4:A:865:ILE:O	4:A:869:GLU:N	2.45	0.49
19:U:48:LEU:O	19:U:53:LYS:NZ	2.45	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:V:101:PHE:CZ	2:V:130:LEU:HD23	2.48	0.49
4:A:556:GLU:OE1	4:A:557:ARG:N	2.46	0.49
4:A:1210:TRP:O	4:A:1260:ARG:NH1	2.45	0.49
2:V:97:LEU:HD11	2:V:127:LYS:HE3	1.93	0.49
4:A:1130:ILE:HD13	4:A:1411:LEU:HB3	1.94	0.49
4:A:1368:VAL:HG13	4:A:1369:LEU:HG	1.95	0.49
5:B:207:VAL:HG11	5:B:375:ALA:CB	2.43	0.49
2:V:101:PHE:CE2	2:V:130:LEU:HD23	2.47	0.48
3:W:245:MET:SD	3:W:245:MET:N	2.86	0.48
5:B:1079:SER:OG	5:B:1080:ARG:N	2.46	0.48
5:B:1109:GLU:OE1	5:B:1109:GLU:N	2.46	0.48
4:A:74:CYS:SG	4:A:84:HIS:CE1	3.06	0.48
4:A:108:ARG:NH1	4:A:189:PRO:O	2.46	0.48
12:I:103:ARG:HB2	12:I:103:ARG:HH11	1.78	0.48
4:A:1347:LEU:HB3	8:E:137:ILE:HD13	1.95	0.48
5:B:269:ILE:HG12	5:B:369:VAL:HG11	1.95	0.48
3:W:281:LEU:HD11	3:W:297:GLY:HA3	1.95	0.48
4:A:340:LYS:HG3	4:A:1436:VAL:HG21	1.95	0.48
10:G:151:ARG:HB2	20:Z:491:LEU:HD11	1.95	0.48
5:B:1069:ILE:HD12	5:B:1070:LEU:N	2.28	0.48
2:V:551:LEU:HD12	2:V:554:ARG:HB3	1.95	0.48
4:A:549:THR:O	4:A:589:LYS:NZ	2.46	0.48
2:V:495:PRO:HB3	2:V:530:THR:HG21	1.95	0.48
4:A:904:GLN:NE2	4:A:981:CYS:O	2.43	0.48
5:B:585:ASN:OD1	5:B:588:ARG:NH2	2.44	0.48
3:W:246:SER:HB3	3:W:283:LEU:HD21	1.96	0.48
4:A:1115:LYS:NZ	4:A:1116:ASN:O	2.38	0.48
19:U:124:LEU:O	19:U:128:VAL:HG23	2.14	0.48
2:V:184:LEU:HD23	8:E:68:PRO:CG	2.44	0.47
2:V:272:GLU:OE1	2:V:279:ARG:NH2	2.45	0.47
2:V:486:PHE:CZ	2:V:507:LEU:HD23	2.48	0.47
2:V:505:LEU:HB2	2:V:540:LEU:HD23	1.95	0.47
3:W:57:ILE:HD13	3:W:83:LEU:HD13	1.96	0.47
5:B:907:VAL:HG11	15:L:46:LYS:HD3	1.96	0.47
10:G:41:LYS:O	10:G:78:ARG:NH1	2.47	0.47
11:H:8:ASP:OD1	11:H:9:ILE:N	2.47	0.47
5:B:344:GLN:NE2	5:B:353:VAL:O	2.47	0.47
5:B:794:VAL:HG13	5:B:965:ILE:HG23	1.95	0.47
3:W:50:LYS:HE2	3:W:65:THR:HG21	1.97	0.47
4:A:1437:ASP:OD2	4:A:1437:ASP:N	2.46	0.47
4:A:62:GLN:O	4:A:84:HIS:N	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:157:ARG:NH2	5:B:177:CYS:O	2.48	0.47
20:Z:450:ILE:HG21	20:Z:468:LEU:HD11	1.97	0.47
2:V:117:MET:HB2	2:V:145:VAL:HG22	1.97	0.47
7:D:55:GLN:HB3	10:G:32:THR:HG22	1.97	0.47
5:B:803:ARG:NH1	13:J:9:THR:O	2.48	0.47
19:U:41:ILE:HG12	19:U:56:LEU:HD11	1.97	0.47
20:Z:543:ASP:N	20:Z:543:ASP:OD1	2.48	0.47
3:W:341:LEU:O	3:W:394:HIS:ND1	2.47	0.46
5:B:310:VAL:HG23	5:B:311:ILE:HD12	1.97	0.46
2:V:370:ILE:HG23	2:V:371:THR:HG23	1.98	0.46
2:V:476:PHE:HB3	2:V:515:VAL:HG22	1.97	0.46
19:U:89:TRP:HA	19:U:92:MET:HE3	1.98	0.46
2:V:97:LEU:HD11	2:V:127:LYS:HD2	1.97	0.46
4:A:1348:SER:HB3	8:E:136:LEU:HD13	1.96	0.46
4:A:460:ARG:NH2	4:A:499:ASP:OD2	2.47	0.46
10:G:93:ASN:OD1	10:G:94:LYS:N	2.48	0.46
4:A:1160:ARG:NH2	4:A:1350:LYS:O	2.49	0.46
4:A:1435:THR:OG1	4:A:1436:VAL:N	2.49	0.45
2:V:157:PHE:O	2:V:161:VAL:HG22	2.15	0.45
4:A:460:ARG:NH1	17:P:18:A:O3'	2.49	0.45
4:A:1288:ILE:HG22	4:A:1292:MET:SD	2.56	0.45
4:A:1357:THR:O	8:E:142:HIS:NE2	2.46	0.45
19:U:29:ILE:HG12	19:U:59:GLY:HA3	1.99	0.45
6:C:180:ALA:O	13:J:42:ARG:NH2	2.50	0.45
20:Z:440:ILE:HG23	20:Z:450:ILE:HD11	1.98	0.45
12:I:85:PRO:O	12:I:87:GLN:NE2	2.50	0.45
2:V:457:PHE:O	2:V:499:ASN:ND2	2.50	0.45
2:V:451:THR:HG21	2:V:456:ALA:HB3	1.99	0.45
5:B:445:LYS:O	5:B:449:ALA:N	2.49	0.44
3:W:306:ASN:N	3:W:306:ASN:OD1	2.48	0.44
4:A:274:ASP:O	4:A:277:THR:OG1	2.35	0.44
5:B:746:THR:HG21	18:T:33:DA:OP1	2.18	0.44
8:E:104:ILE:HG22	8:E:105:VAL:O	2.18	0.44
3:W:56:TYR:HD2	3:W:62:ILE:HD13	1.82	0.44
20:Z:513:VAL:HG21	20:Z:518:LEU:HD21	1.99	0.44
2:V:223:ARG:NH2	2:V:300:ASP:OD1	2.51	0.44
5:B:271:ILE:CD1	5:B:311:ILE:HD13	2.48	0.44
6:C:7:PRO:O	14:K:104:ARG:NH1	2.46	0.44
4:A:760:LEU:HD11	4:A:781:ILE:HG21	1.99	0.44
4:A:1382:LEU:HA	4:A:1385:VAL:HG12	2.00	0.44
19:U:171:SER:OG	19:U:175:ARG:NH2	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:B:389:GLY:HA2	5:B:667:THR:HG23	2.00	0.44
2:V:117:MET:SD	2:V:123:VAL:HG11	2.58	0.44
3:W:202:SER:HB2	19:U:120:ILE:HD11	2.00	0.44
3:W:207:THR:O	3:W:211:THR:HG23	2.18	0.44
3:W:209:LEU:HD11	3:W:245:MET:CE	2.47	0.43
3:W:534:VAL:HG21	3:W:557:LEU:HD13	1.99	0.43
8:E:47:LYS:HE2	8:E:47:LYS:HA	2.00	0.43
4:A:466:LYS:CD	4:A:1090:LEU:HD21	2.48	0.43
12:I:105:GLU:OE2	12:I:106:ASP:N	2.50	0.43
2:V:243:MET:SD	2:V:246:HIS:ND1	2.88	0.43
5:B:819:SER:OG	5:B:827:GLU:OE1	2.19	0.43
10:G:82:GLY:N	10:G:147:ILE:O	2.48	0.43
2:V:97:LEU:HD22	2:V:117:MET:HE3	2.01	0.43
5:B:731:GLN:NE2	17:P:16:G:OP1	2.49	0.43
19:U:71:MET:SD	19:U:71:MET:N	2.91	0.43
5:B:1068:GLN:N	5:B:1073:GLN:O	2.45	0.43
2:V:514:ARG:O	2:V:514:ARG:NE	2.48	0.43
3:W:455:LEU:HD22	3:W:469:VAL:HG22	2.01	0.43
19:U:102:ASP:N	19:U:102:ASP:OD1	2.51	0.43
20:Z:554:GLU:OE2	20:Z:559:GLN:NE2	2.52	0.43
4:A:460:ARG:HB2	4:A:501:MET:HE3	2.01	0.43
5:B:601:VAL:HG22	5:B:616:THR:HG23	2.01	0.43
3:W:50:LYS:CE	3:W:65:THR:HG21	2.49	0.42
4:A:408:ARG:NH1	4:A:413:TYR:O	2.52	0.42
5:B:905:ASP:OD2	5:B:924:ARG:NH1	2.51	0.42
4:A:1137:PRO:HB2	4:A:1341:VAL:HG13	2.01	0.42
4:A:513:ALA:CB	9:F:90:LEU:HD21	2.46	0.42
4:A:636:ILE:O	11:H:117:SER:OG	2.22	0.42
5:B:794:VAL:O	5:B:946:GLY:N	2.47	0.42
2:V:469:LEU:HD23	2:V:507:LEU:HD21	2.00	0.42
5:B:207:VAL:HG11	5:B:375:ALA:HB2	2.01	0.42
8:E:71:GLN:HB2	8:E:99:ILE:HD12	2.00	0.42
12:I:69:ILE:HG22	12:I:71:ASP:H	1.84	0.42
7:D:38:HIS:HB2	7:D:68:THR:HG22	2.00	0.42
10:G:152:VAL:HG22	10:G:157:ILE:HG12	2.00	0.42
4:A:84:HIS:HD1	5:B:1127:ILE:HG22	1.84	0.42
4:A:1430:CYS:O	4:A:1435:THR:HG22	2.19	0.42
5:B:942:LYS:NZ	17:P:16:G:O3'	2.53	0.42
7:D:71:PHE:O	7:D:73:ARG:NH1	2.52	0.42
2:V:97:LEU:HD11	2:V:127:LYS:CE	2.49	0.42
4:A:1213:ARG:NH1	4:A:1215:GLU:OE2	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:C:80:ASP:OD1	6:C:81:LYS:N	2.52	0.42
8:E:38:GLU:OE1	8:E:38:GLU:N	2.40	0.42
2:V:97:LEU:HD13	2:V:117:MET:HE3	2.02	0.42
4:A:292:ARG:NH1	4:A:293:ASN:OD1	2.53	0.42
10:G:39:THR:O	10:G:43:GLY:N	2.52	0.42
6:C:234:GLU:OE2	13:J:12:LYS:NZ	2.51	0.41
8:E:133:GLN:HA	8:E:136:LEU:HD12	2.01	0.41
19:U:21:ASP:OD1	19:U:22:GLU:N	2.52	0.41
2:V:449:VAL:O	2:V:492:THR:HG21	2.20	0.41
6:C:245:VAL:HG11	14:K:105:PHE:CZ	2.54	0.41
2:V:466:THR:OG1	2:V:506:ARG:NH2	2.53	0.41
20:Z:604:ASP:OD1	20:Z:605:GLY:N	2.52	0.41
4:A:1208:SER:O	4:A:1260:ARG:NH1	2.52	0.41
4:A:360:ASP:OD1	5:B:1062:ARG:NE	2.48	0.41
5:B:988:LYS:O	5:B:992:ASN:ND2	2.52	0.41
2:V:69:LEU:HD22	3:W:101:LEU:HD12	2.01	0.41
4:A:74:CYS:O	5:B:1129:ASN:ND2	2.54	0.41
4:A:466:LYS:HD2	4:A:1090:LEU:HD21	2.03	0.41
4:A:1139:LEU:HD13	4:A:1346:VAL:HG21	2.03	0.41
12:I:69:ILE:O	12:I:72:VAL:HG22	2.21	0.41
3:W:314:PHE:HB2	3:W:359:ILE:HD11	2.03	0.41
5:B:274:ARG:NH2	5:B:281:ASP:OD1	2.54	0.41
5:B:1115:GLN:HB2	5:B:1148:LEU:HD11	2.03	0.41
4:A:535:MET:O	4:A:669:TYR:OH	2.33	0.40
12:I:56:ASN:ND2	12:I:58:ILE:HD11	2.36	0.40
2:V:368:GLU:OE2	2:V:413:LYS:NZ	2.55	0.40
2:V:429:VAL:O	2:V:433:THR:OG1	2.34	0.40
4:A:479:TRP:CD1	5:B:931:ILE:HD12	2.57	0.40
5:B:69:ALA:HB2	5:B:423:ILE:HG22	2.03	0.40
3:W:468:GLN:O	3:W:472:LEU:N	2.52	0.40
4:A:84:HIS:ND1	5:B:1127:ILE:HG22	2.36	0.40
4:A:890:ARG:CZ	4:A:1023:VAL:HG12	2.50	0.40
2:V:502:ARG:HD2	2:V:540:LEU:HD22	2.03	0.40
3:W:477:PHE:CZ	3:W:497:LEU:HD21	2.57	0.40
11:H:34:SER:OG	11:H:35:PHE:N	2.55	0.40
4:A:965:VAL:HG12	4:A:969:ILE:HD12	2.03	0.40
5:B:779:ILE:O	5:B:964:ASP:N	2.53	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	X	13/380 (3%)	13 (100%)	0	0	100	100
2	V	548/554 (99%)	530 (97%)	18 (3%)	0	100	100
3	W	512/590 (87%)	493 (96%)	19 (4%)	0	100	100
4	A	1387/1970 (70%)	1337 (96%)	50 (4%)	0	100	100
5	B	1130/1174 (96%)	1076 (95%)	54 (5%)	0	100	100
6	C	250/271 (92%)	242 (97%)	8 (3%)	0	100	100
7	D	122/142 (86%)	115 (94%)	7 (6%)	0	100	100
8	E	203/210 (97%)	196 (97%)	7 (3%)	0	100	100
9	F	75/127 (59%)	73 (97%)	2 (3%)	0	100	100
10	G	169/171 (99%)	165 (98%)	4 (2%)	0	100	100
11	H	146/150 (97%)	143 (98%)	3 (2%)	0	100	100
12	I	112/125 (90%)	104 (93%)	8 (7%)	0	100	100
13	J	64/67 (96%)	62 (97%)	2 (3%)	0	100	100
14	K	113/115 (98%)	111 (98%)	2 (2%)	0	100	100
15	L	42/58 (72%)	41 (98%)	1 (2%)	0	100	100
19	U	192/527 (36%)	189 (98%)	3 (2%)	0	100	100
20	Z	266/1087 (24%)	256 (96%)	10 (4%)	0	100	100
All	All	5344/7718 (69%)	5146 (96%)	198 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	X	13/331 (4%)	13 (100%)	0	100	100
2	V	493/495 (100%)	486 (99%)	7 (1%)	62	84
3	W	466/513 (91%)	463 (99%)	3 (1%)	84	94
4	A	1232/1749 (70%)	1215 (99%)	17 (1%)	62	84
5	B	994/1027 (97%)	975 (98%)	19 (2%)	52	79
6	C	231/248 (93%)	231 (100%)	0	100	100
7	D	114/126 (90%)	111 (97%)	3 (3%)	41	70
8	E	190/192 (99%)	187 (98%)	3 (2%)	58	82
9	F	67/111 (60%)	65 (97%)	2 (3%)	36	65
10	G	152/152 (100%)	147 (97%)	5 (3%)	33	62
11	H	129/131 (98%)	128 (99%)	1 (1%)	79	91
12	I	103/112 (92%)	103 (100%)	0	100	100
13	J	55/56 (98%)	54 (98%)	1 (2%)	54	80
14	K	104/104 (100%)	104 (100%)	0	100	100
15	L	41/55 (74%)	40 (98%)	1 (2%)	44	73
19	U	167/396 (42%)	161 (96%)	6 (4%)	30	59
20	Z	244/940 (26%)	240 (98%)	4 (2%)	58	82
All	All	4795/6738 (71%)	4723 (98%)	72 (2%)	60	83

All (72) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	V	180	GLU
2	V	221	PHE
2	V	271	ARG
2	V	365	MET
2	V	376	MET
2	V	416	GLN
2	V	427	TYR
3	W	245	MET
3	W	398	CYS
3	W	487	MET
4	A	51	ARG
4	A	78	MET

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Mol	Chain	Res	Type
4	A	248	MET
4	A	271	ARG
4	A	317	MET
4	A	803	LYS
4	A	862	ARG
4	A	899	GLU
4	A	1133	LYS
4	A	1167	ARG
4	A	1199	MET
4	A	1202	PHE
4	A	1287	CYS
4	A	1388	PHE
4	A	1428	MET
4	A	1437	ASP
4	A	1484	MET
5	B	108	MET
5	B	199	LYS
5	B	211	LYS
5	B	242	ARG
5	B	385	ARG
5	B	407	MET
5	B	497	LYS
5	B	518	HIS
5	B	584	MET
5	B	603	MET
5	B	792	ASP
5	B	796	MET
5	B	891	ASP
5	B	914	GLU
5	B	918	PHE
5	B	1048	TYR
5	B	1075	MET
5	B	1080	ARG
5	B	1141	ARG
7	D	24	LYS
7	D	39	MET
7	D	53	ASP
8	E	52	ARG
8	E	121	MET
8	E	129	GLN
9	F	59	LYS
9	F	94	MET

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Mol	Chain	Res	Type
10	G	29	LYS
10	G	33	GLU
10	G	39	THR
10	G	131	MET
10	G	155	ASN
11	H	145	MET
13	J	47	ARG
15	L	38	GLU
19	U	28	SER
19	U	71	MET
19	U	80	GLN
19	U	100	PHE
19	U	139	LEU
19	U	180	GLN
20	Z	451	MET
20	Z	564	TYR
20	Z	635	MET
20	Z	740	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
17	P	16/16 (100%)	9 (56%)	2 (12%)

All (9) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
17	P	4	U
17	P	5	U
17	P	6	U
17	P	7	G
17	P	8	G
17	P	9	C
17	P	10	A
17	P	11	U
17	P	18	A

All (2) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
17	P	3	U
17	P	6	U

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 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 (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

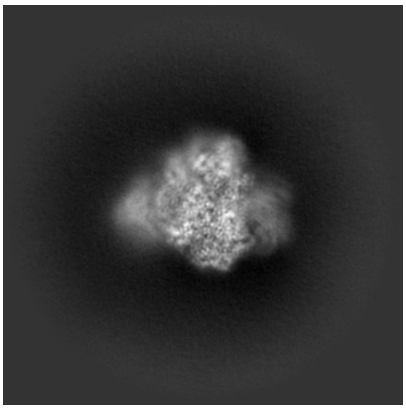
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-42285. These allow visual inspection of the internal detail of the map and identification of artifacts.

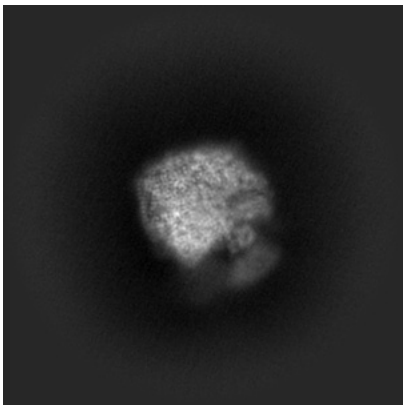
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

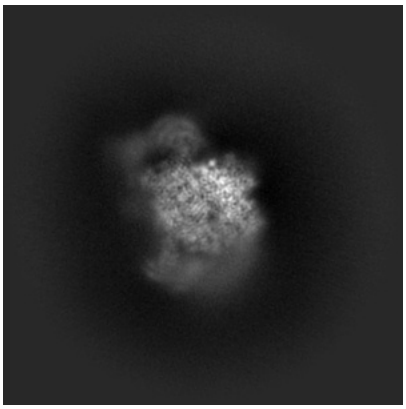
6.1.1 Primary map



X

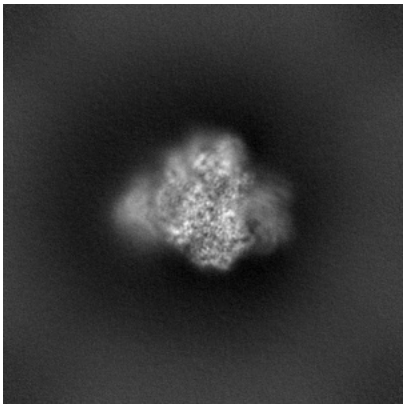


Y

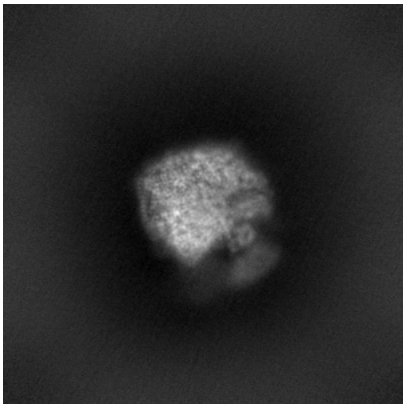


Z

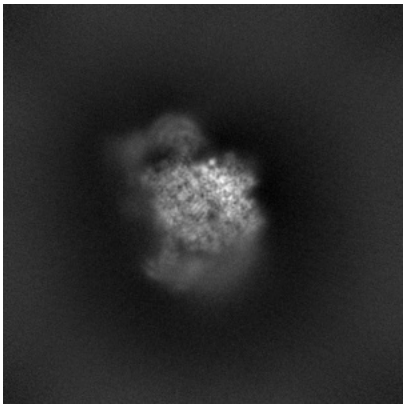
6.1.2 Raw map



X



Y

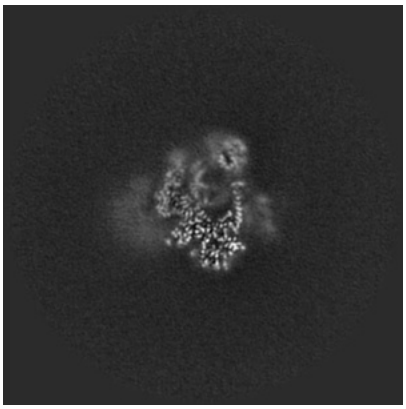


Z

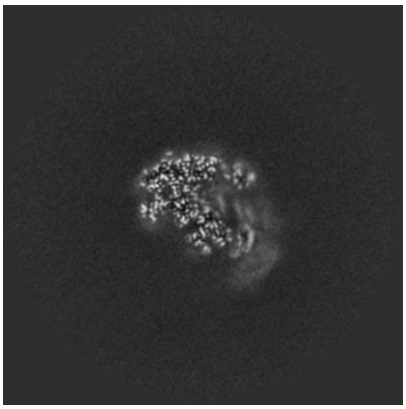
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

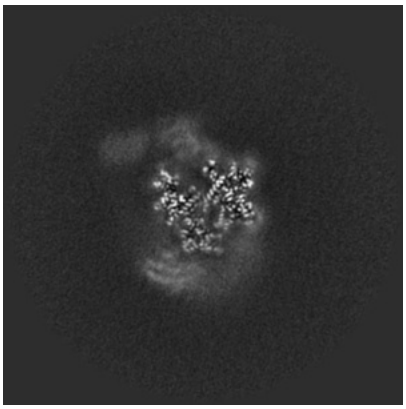
6.2.1 Primary map



X Index: 256

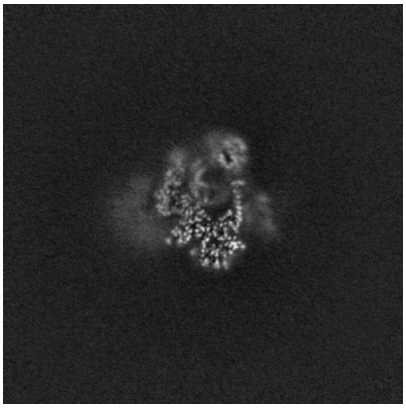


Y Index: 256

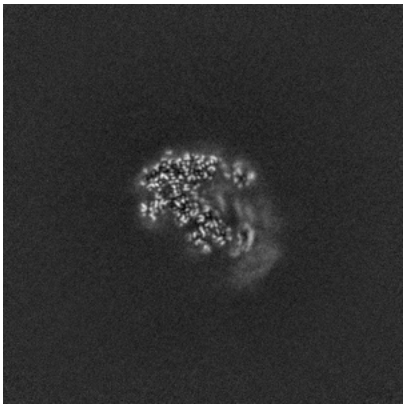


Z Index: 256

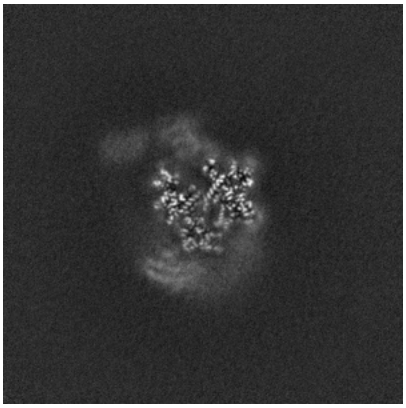
6.2.2 Raw map



X Index: 256



Y Index: 256

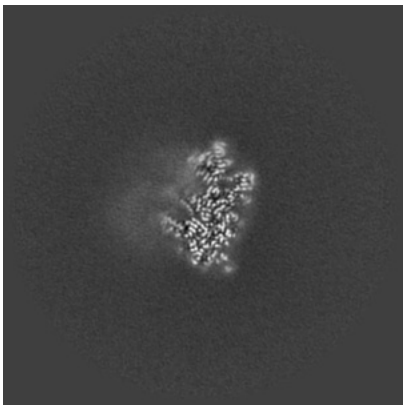


Z Index: 256

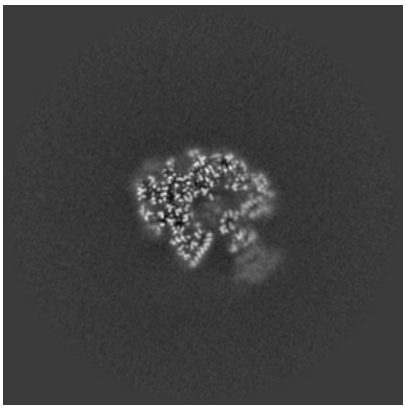
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

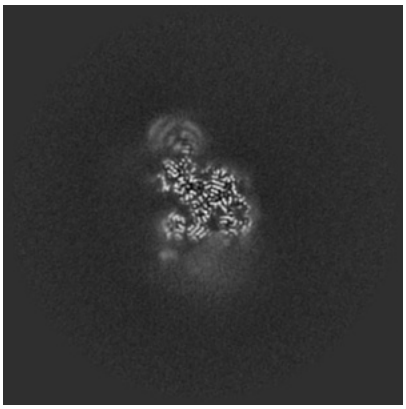
6.3.1 Primary map



X Index: 289

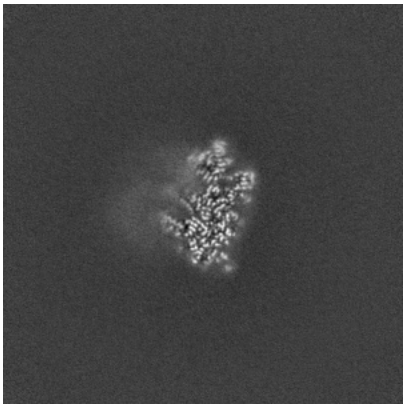


Y Index: 281

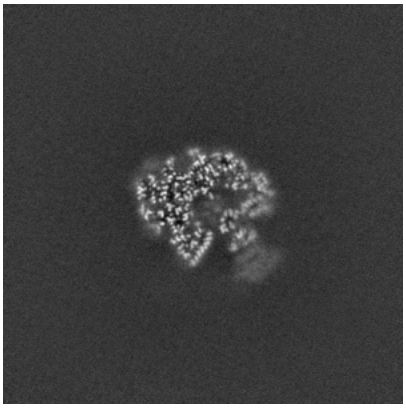


Z Index: 220

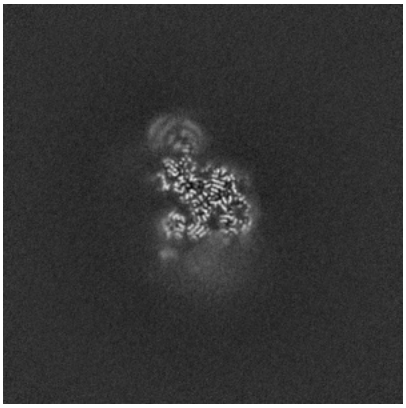
6.3.2 Raw map



X Index: 289



Y Index: 281

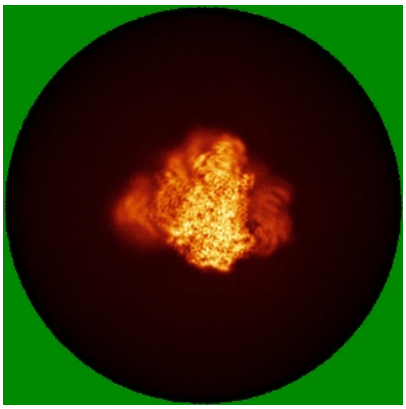


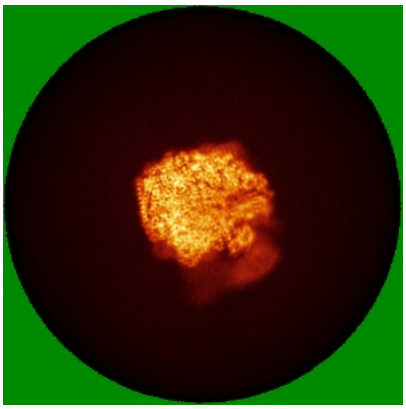
Z Index: 220

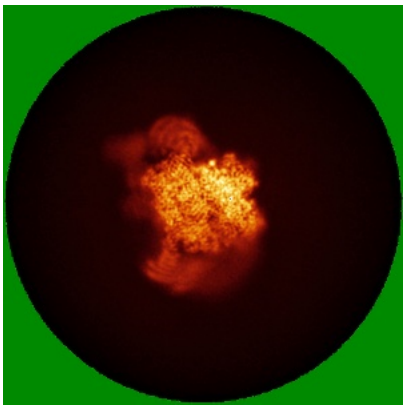
The images above show the largest variance slices of the map in three orthogonal directions.

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

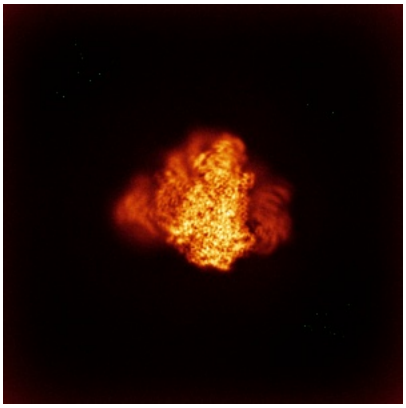
6.4.1 Primary map

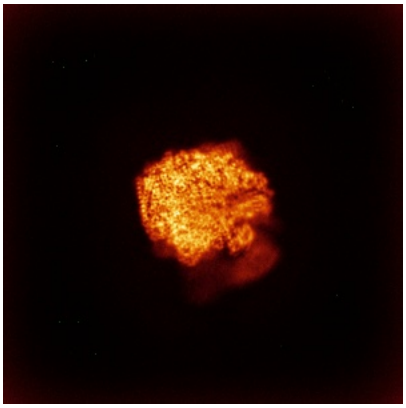

X

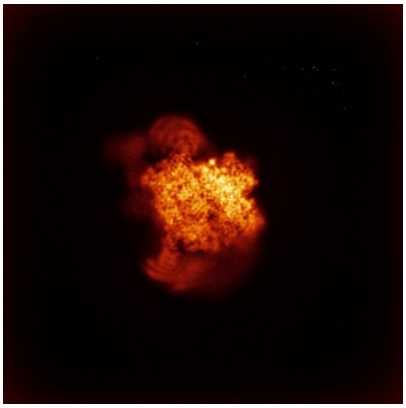

Y


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 0.35. 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.

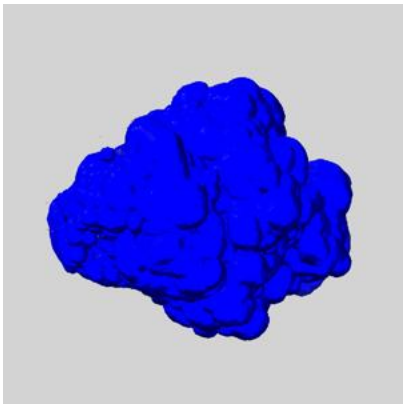
6.6 Mask visualisation

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

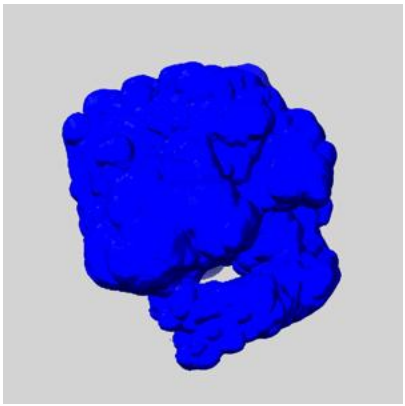
A mask typically either:

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

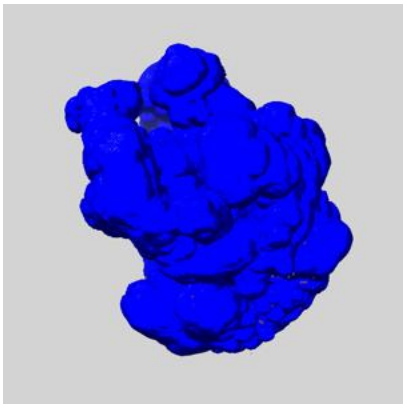
6.6.1 emd_42285_msk_1.map



X



Y

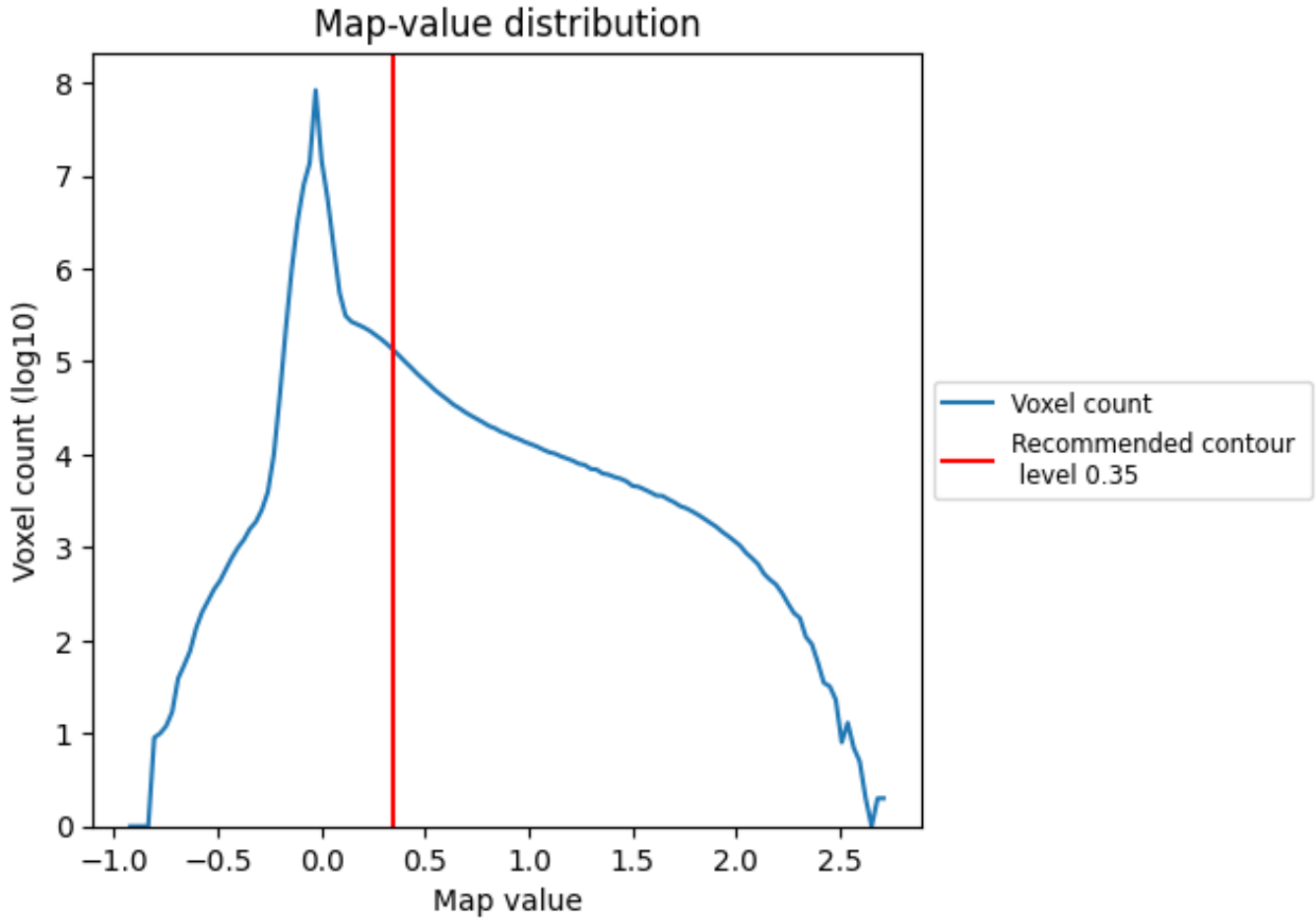


Z

7 Map analysis

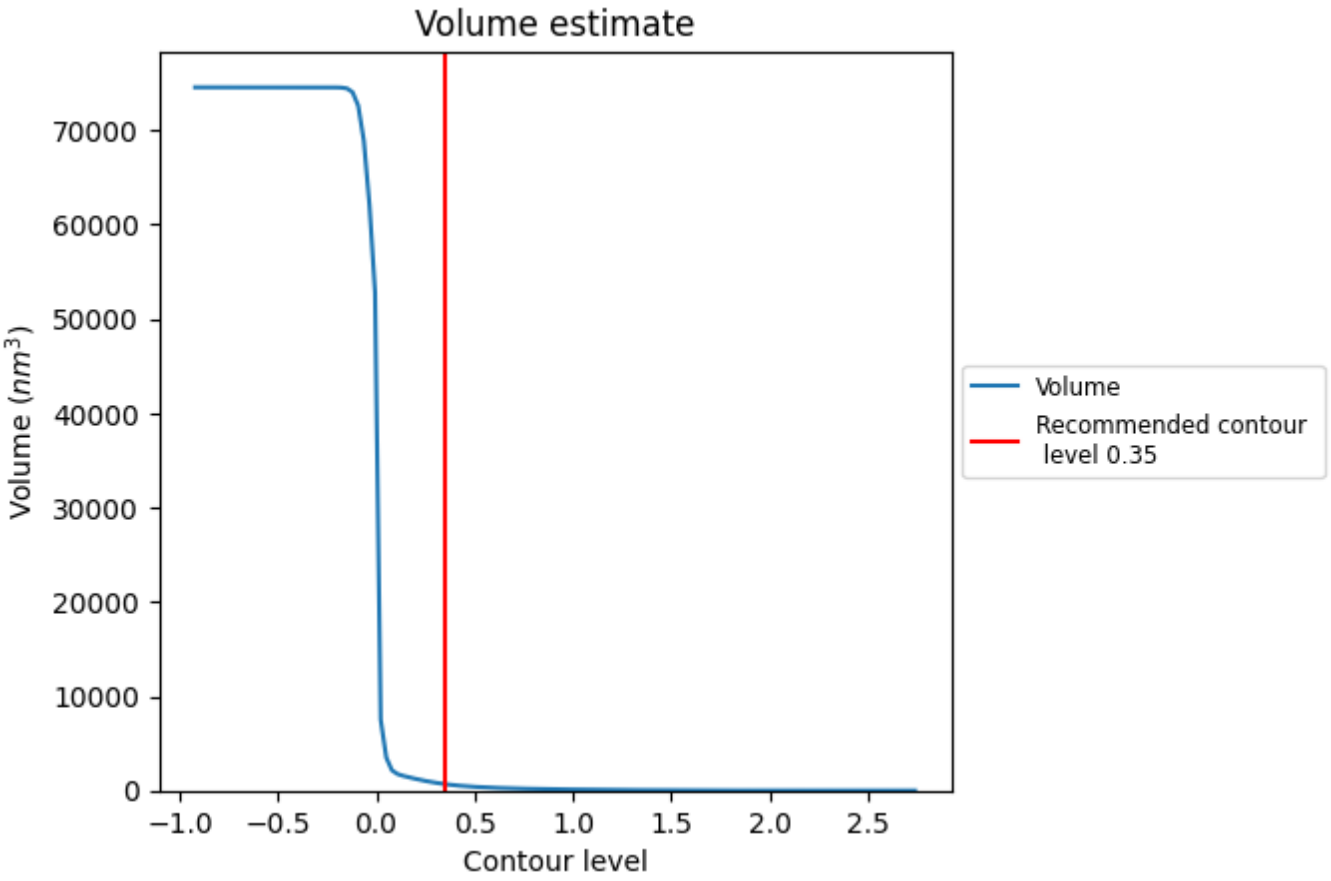
This section contains the results of statistical analysis of the map.

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.

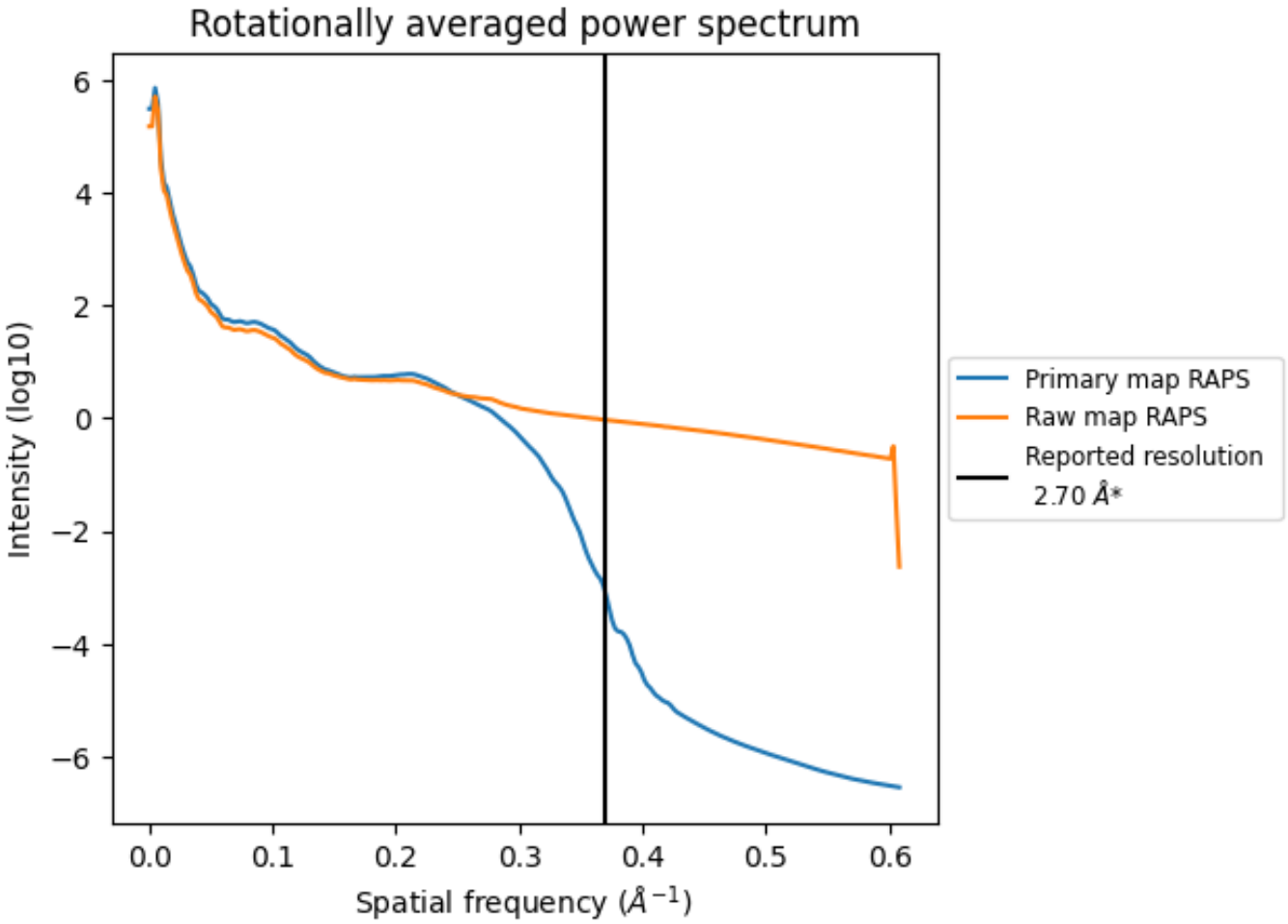
7.2 Volume estimate



The volume at the recommended contour level is 683 nm^3; this corresponds to an approximate mass of 617 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)

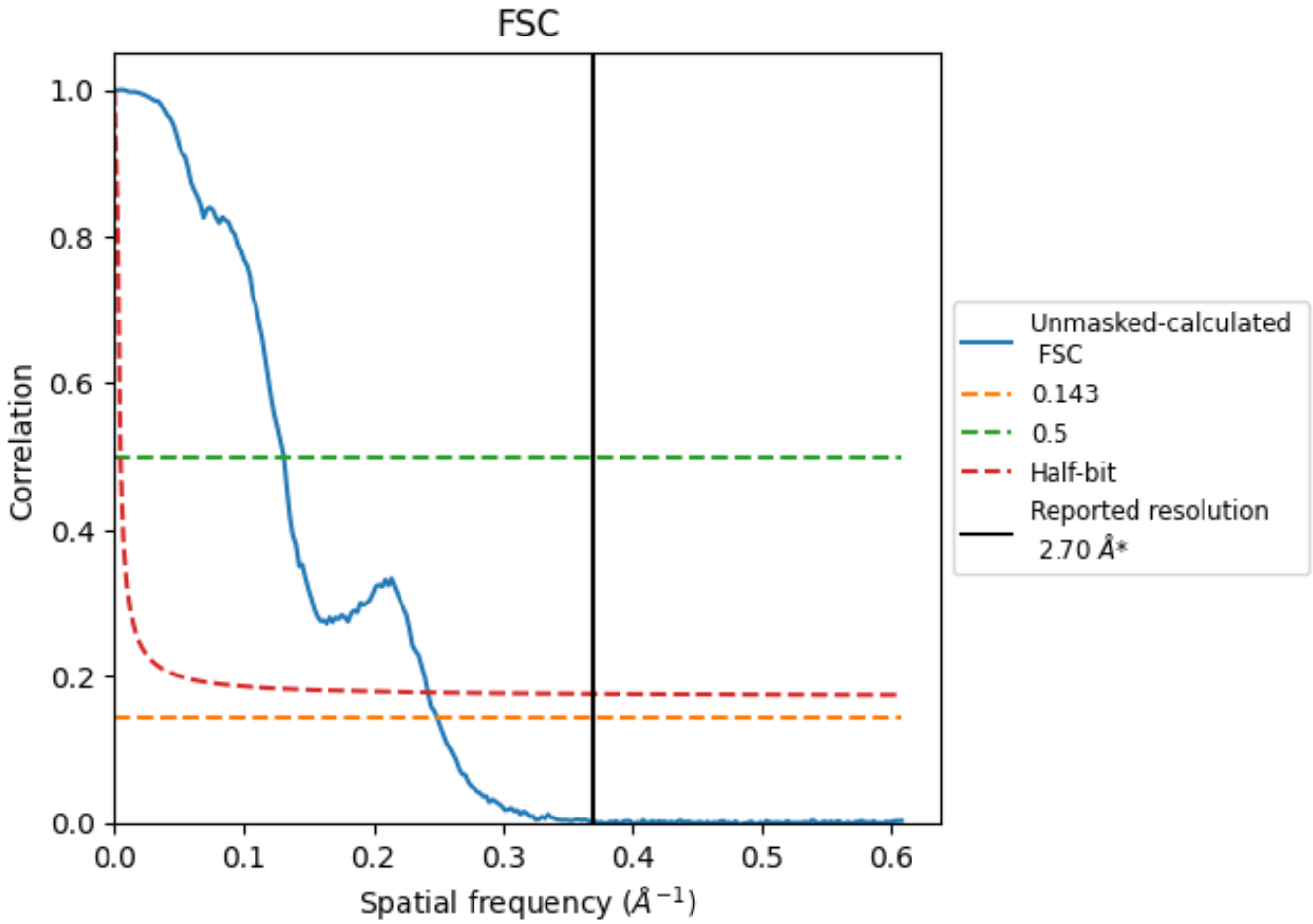


*Reported resolution corresponds to spatial frequency of 0.370 Å^{-1}

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 0.370 Å^{-1}

8.2 Resolution estimates (i)

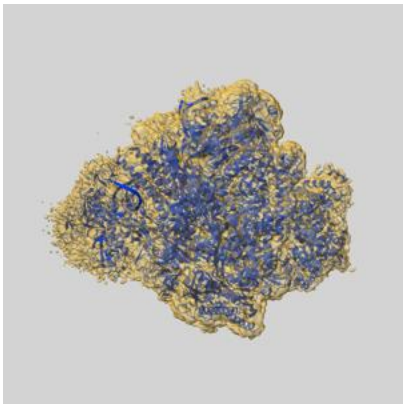
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.70	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.01	7.65	4.13

*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 4.01 differs from the reported value 2.7 by more than 10 %

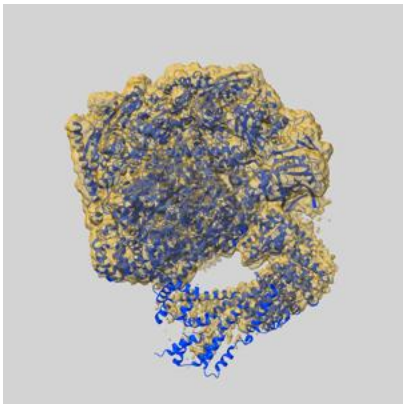
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-42285 and PDB model 8UI0. Per-residue inclusion information can be found in section 3 on page 8.

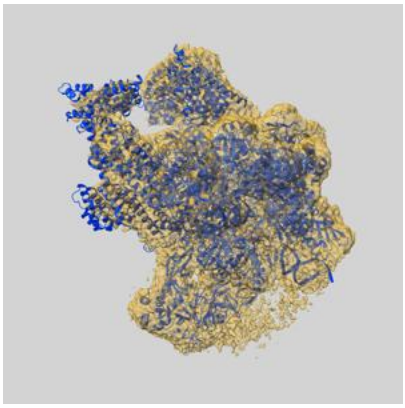
9.1 Map-model overlay



X



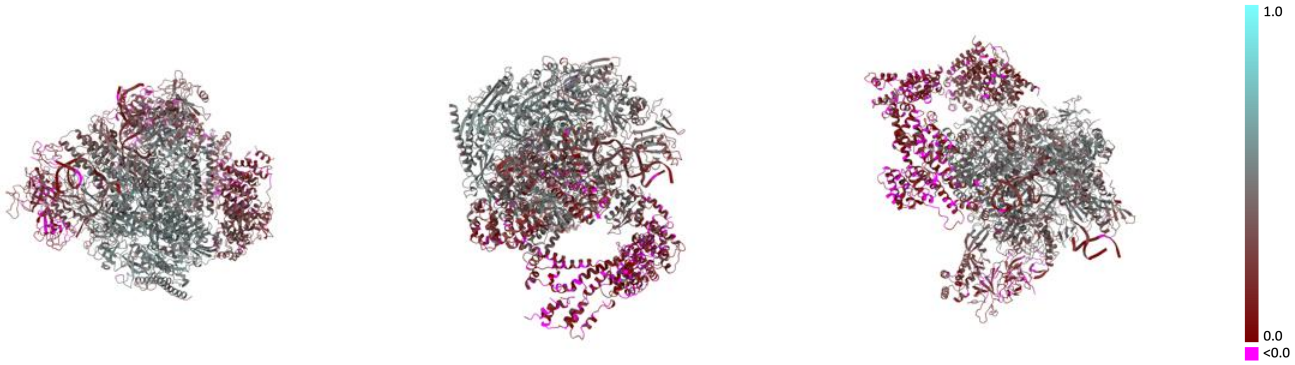
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.35 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

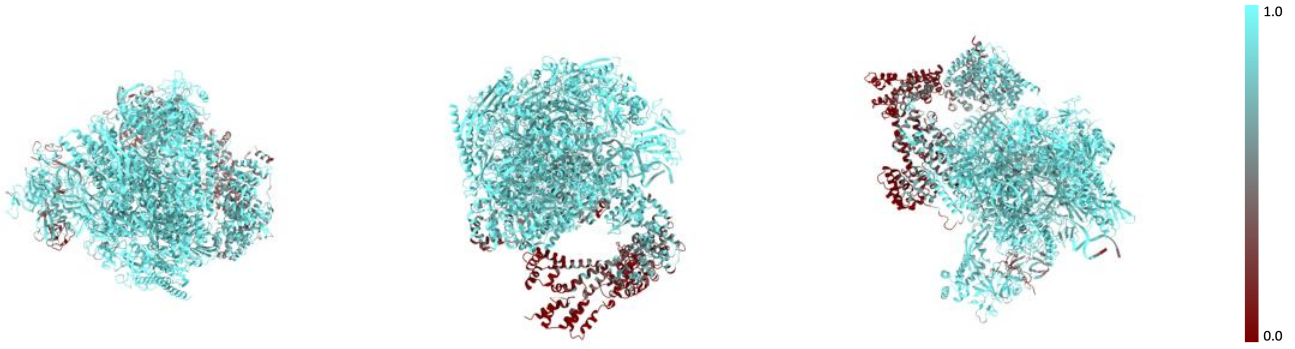
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

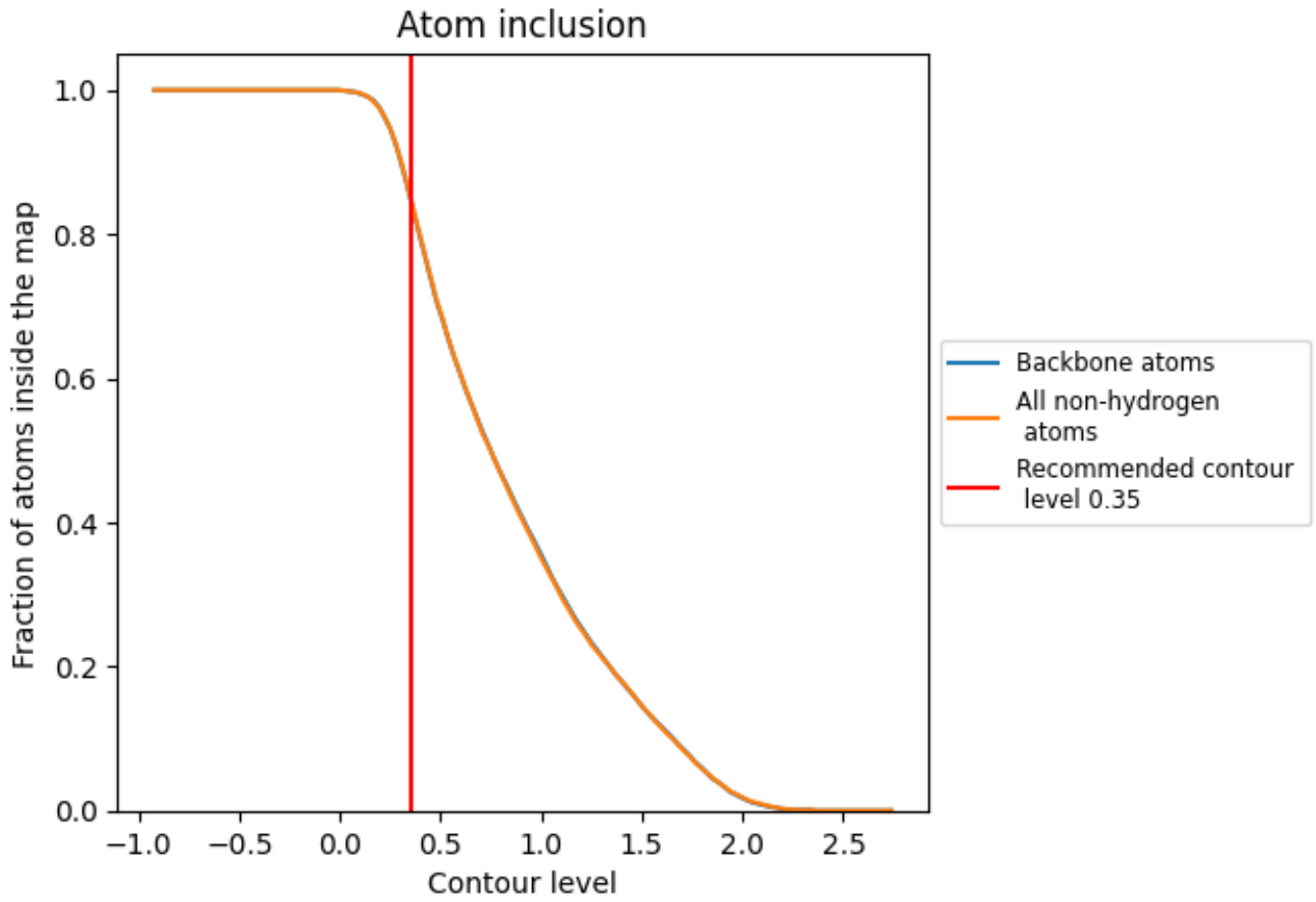
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.35).

9.4 Atom inclusion (i)



At the recommended contour level, 85% of all backbone atoms, 85% 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 (0.35) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8530	0.3530
A	0.9590	0.4460
B	0.9690	0.4730
C	0.9850	0.5010
D	0.9730	0.2110
E	0.9640	0.4120
F	0.9900	0.4900
G	0.9690	0.2600
H	0.9760	0.4830
I	0.9880	0.4140
J	0.9840	0.5190
K	0.9800	0.5000
L	0.9920	0.4680
N	0.8710	0.1500
P	0.9320	0.3250
T	0.9120	0.2540
U	0.7450	0.1880
V	0.3900	0.0810
W	0.6290	0.1790
X	0.7900	0.1060
Z	0.6690	0.1580