wwPDB EM Validation Summary Report (i)

Jan 20, 2026 – 12:18 PM EST

PDB ID	:	9YNF / pdb_00009ynf
EMDB ID	:	EMD-73176
Title	:	Motor domain of human dynein-1 in post1 state
Authors	:	Yang, J.; Rao, Q.; Chai, P.; Zhang, K.
Deposited on	:	2025-10-10
Resolution	:	3.92 Å(reported)

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

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

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

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

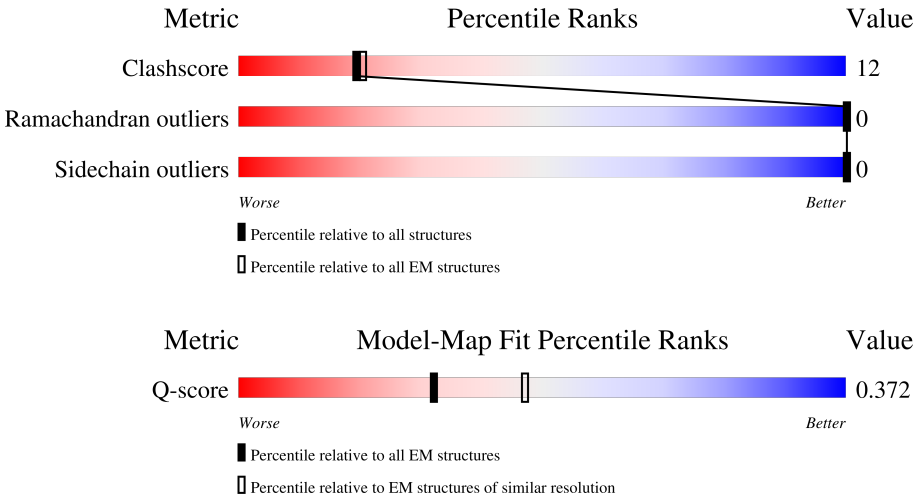
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

1 Overall quality at a glance

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

The reported resolution of this entry is 3.92 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
Q-score	-	25397	7862 (3.42 - 4.42)

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	4646	47% 19% 35%

2 Entry composition (i)

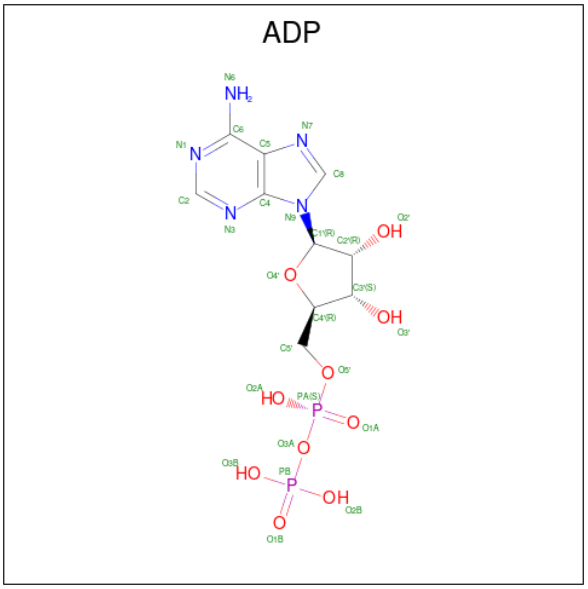
There are 5 unique types of molecules in this entry. The entry contains 24588 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Cytoplasmic dynein 1 heavy chain 1.

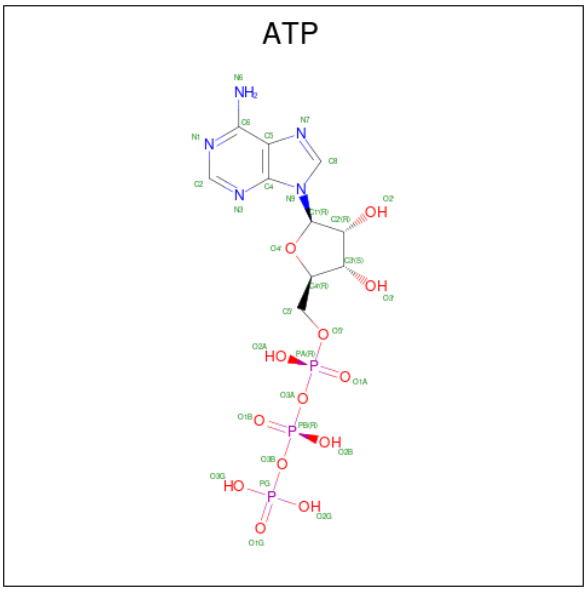
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3038	24471	15586	4225	4538	122	0	0

- Molecule 2 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$) (labeled as "Ligand of Interest" by depositor).



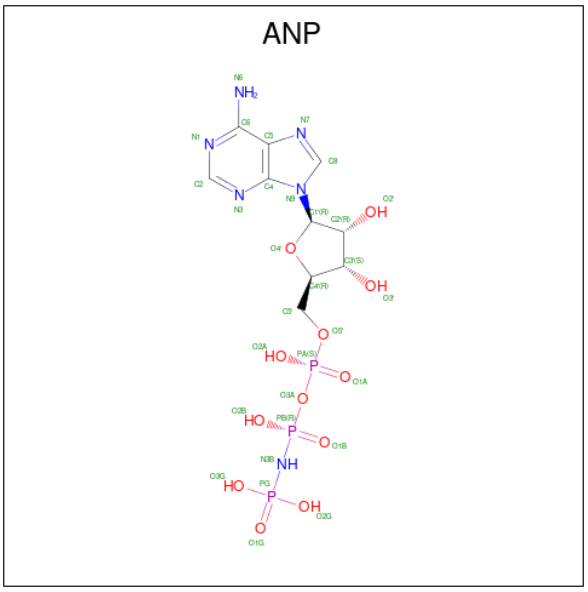
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
2	A	1	27	10	5	10	2	0
			Total	C	N	O	P	
2	A	1	27	10	5	10	2	0

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 4 is PHOSPHOAMINOPHOSPHONIC ACID-ADENYLATE ESTER (CCD ID: ANP) (formula: $C_{10}H_{17}N_6O_{12}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					AltConf
4	A	1	Total	C	N	O	P	0
			31	10	6	12	3	

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

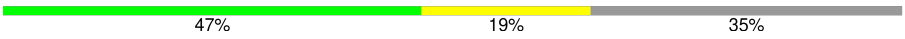
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
5	A	1	1	1	0

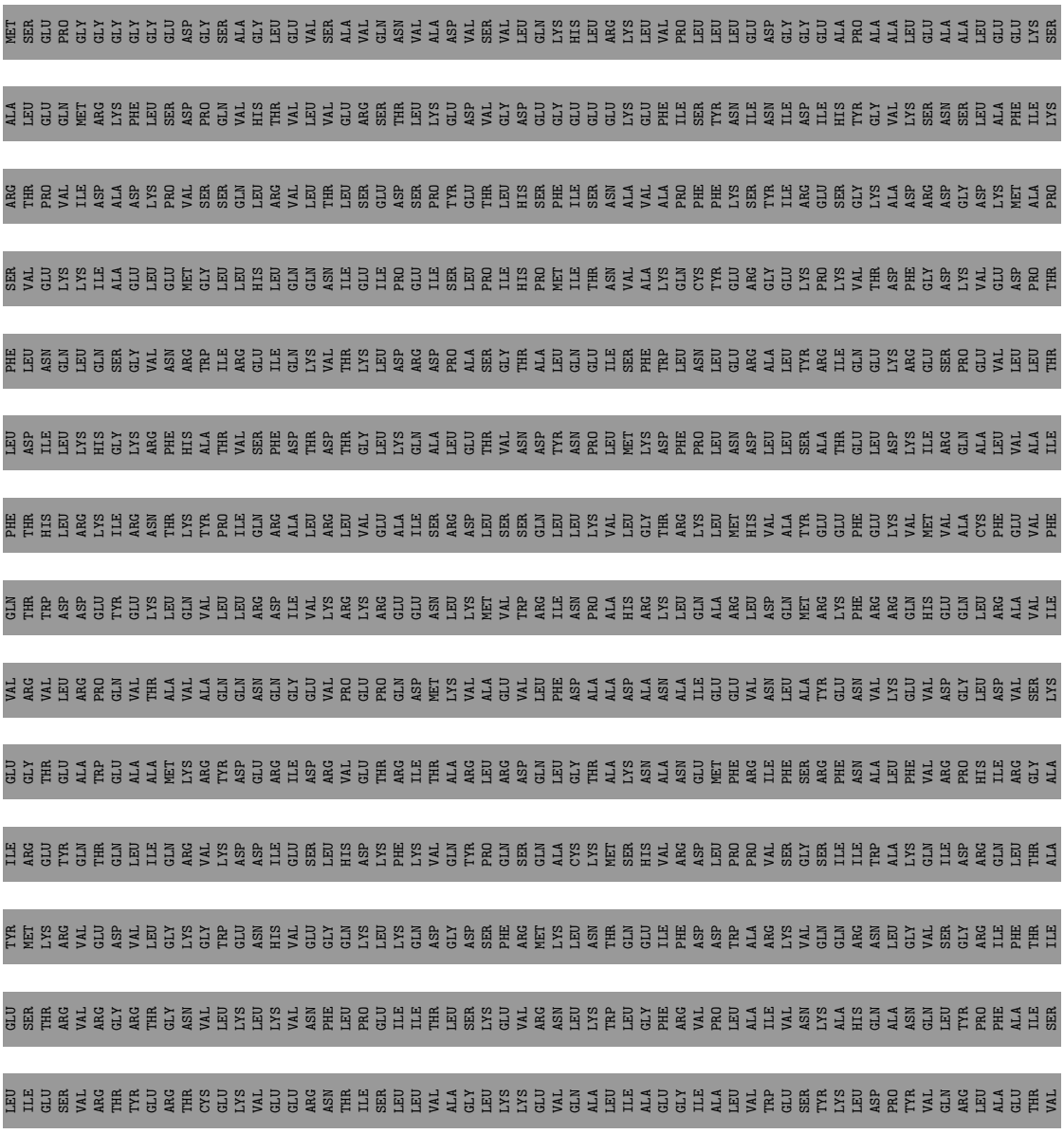
3 Residue-property plots (i)

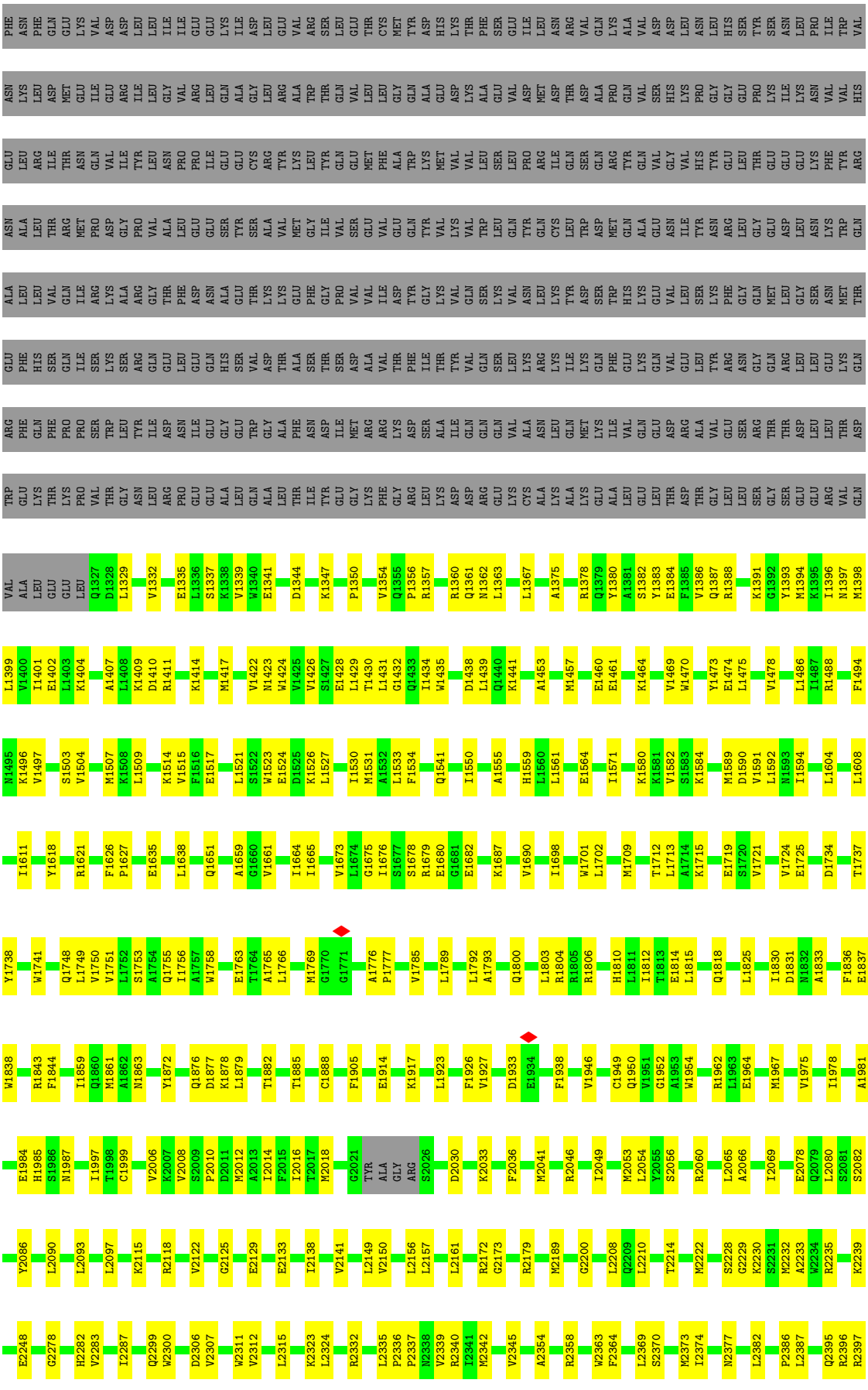
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

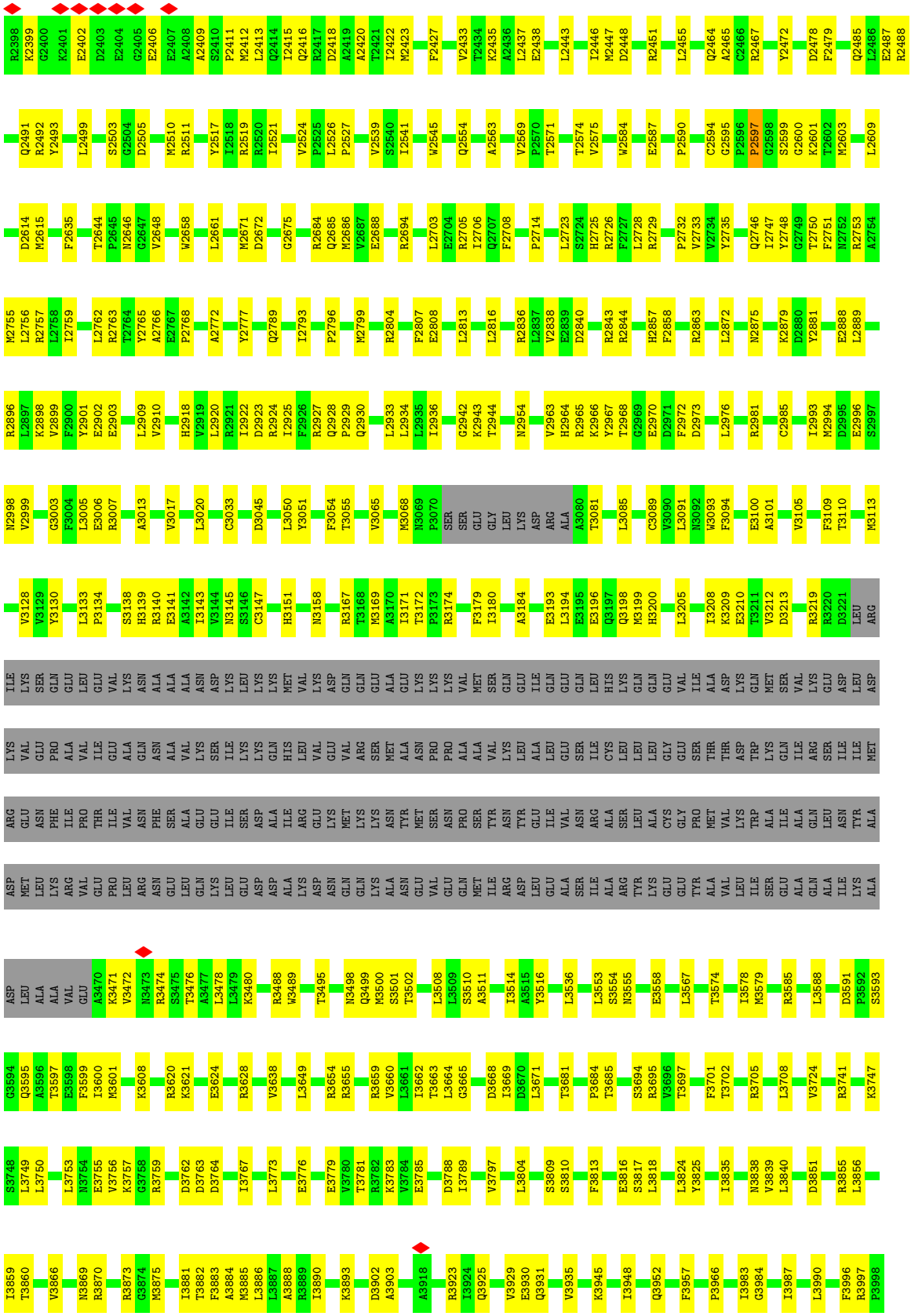
- Molecule 1: Cytoplasmic dynein 1 heavy chain 1

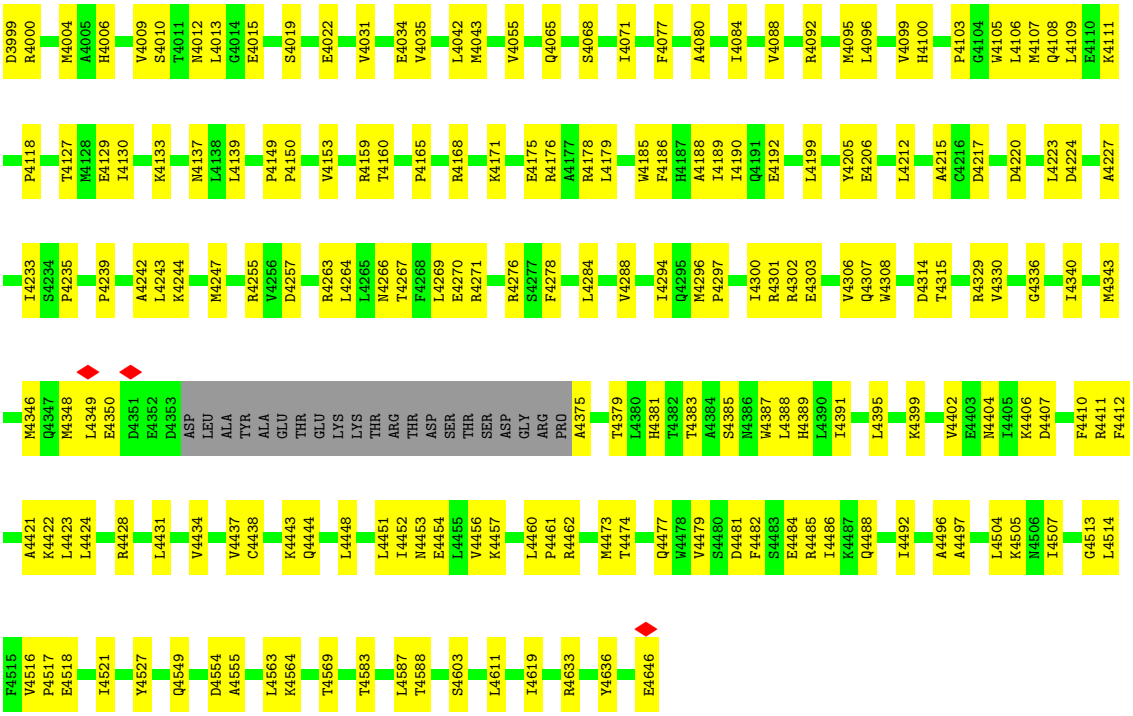
Chain A:








R2398 K2399 G2400 K2401 E2402 D2403 E2404 G2405 E2406 E2407 A2408 A2409 S2410 P2411 M2412 L2413 Q2414 I2415 Q2416 R2417 D2418 A2419 A2420 T2421 I2422 M2423 F2427 V2433 T2434 K2435 A2436 L2437 E2438 L2443 I2446 M2447 D2448 R2451 L2455 Q2464 A2465 C2466 R2467 Y2472 D2478 F2479 Q2485 L2486 E2487 R2488
Q2491 R2492 Y2493 L2499 S2503 G2504 D2505 M2510 R2511 Y2517 I2518 R2519 R2520 I2521 V2524 P2525 L2526 P2527 V2539 S2540 I2541 W2545 Q2554 A2563 V2569 P2570 T2571 T2574 V2575 W2584 E2587 P2590 C2594 G2595 P2596 P2597 G2598 S2599 G2600 K2601 T2602 M2603 L2609
D2614 M2615 F2635 T2644 P2645 N2646 G2647 V2648 W2658 L2661 M2671 D2672 G2675 R2684 Q2685 M2686 V2687 E2688 R2694 L2703 E2704 R2705 I2706 Q2707 F2708 P2714 L2723 S2724 H2725 R2726 F2727 L2728 R2729 P2732 V2733 V2734 Y2735 Q2746 I2747 Y2748 G2749 T2750 F2751 N2752 R2753 A2754
M2755 L2756 R2757 L2758 I2759 L2762 R2763 T2764 Y2765 A2766 E2767 P2768 A2772 Y2777 Q2789 I2793 P2796 M2799 R2804 F2807 E2808 L2813 L2816 R2836 L2837 V2838 E2839 D2840 R2843 R2844 H2857 F2858 R2863 L2872 N2875 K2879 D2880 Y2881 E2888 L2889
R2896 L2897 K2898 V2899 F2900 Y2901 E2902 E2903 L2909 V2910 H2918 V2919 L2920 R2921 I2922 D2923 R2924 I2925 F2926 R2927 Q2928 P2929 Q2930 L2933 L2934 L2935 I2936 G2942 K2943 T2944 N2954 V2963 H2964 R2965 K2966 Y2967 T2968 G2969 E2970 D2971 F2972 D2973 L2976 R2981 C2985 I2993 M2994 D2995 E2996 S2997
N2998 V2999 G3003 F3004 L3005 E3006 R3007 A3013 V3017 L3020 C3033 D3045 L3050 Y3051 F3054 T3055 V3065 M3068 N3069 P3070 SER SER GLU GLY LEU LYS ASP ARG ALA A3080 T3081 L3085 C3089 V3090 L3091 N3092 W3093 F3094 E3100 A3101 V3105 I3109 T3110 M3113
V3128 V3129 Y3130 L3133 P3134 S3138 H3139 R3140 E3141 A3142 I3143 V3144 N3145 S3146 C3147 H3151 N3158 R3167 T3168 M3169 A3170 I3171 T3172 P3173 R3174 F3179 I3180 A3184 E3193 L3194 E3195 E3196 Q3197 Q3198 M3199 H3200 L3205 I3208 K3209 E3210 T3211 V3212 D3213 R3219 R3220 D3221 LEU ARG
ILE LYS SER GLN GLU LEU GLU VAL LYS ASN ALA ALA ASN ASP LYS LEU LYS LYS MET VAL LYS ASP GLN GLN GLU ALA GLU LYS LYS VAL MET SER GLN GLU ILE GLN GLU GLN LEU HIS LYS GLN GLN GLU VAL ILE ALA ASP LYS GLN MET LYS LEU ASP
LYS VAL GLU PRO ALA VAL ILE GLU ALA GLN ASN ALA VAL LYS SER ILE LYS LYS GLN HIS LEU VAL GLU VAL ARG SER MET ALA ASN PRO PRO ALA ALA LEU GLU SER ILE CYS LEU LEU LEU GLY GLU SER THR THR ASP TRP LYS GLN ILE ARG SER ILE MET
ARG GLU ASN PHE ILE PRO THR ILE VAL ASN PHE SER ALA GLU GLU ILE SER ASP ALA ILE ARG GLU LYS MET LYS LYS ASN TYR MET SER ASN PRO SER TYR ASN TYR GLU ILE VAL ASN ARG ALA SER LEU ALA CYS GLY PRO MET VAL LYS TRP ALA ILE ALA GLN LEU ASN TYR ALA
ASP MET LEU LYS ARG VAL GLU PRO LEU ARG ASN GLU LEU GLN LYS LEU GLU ASP ASP ALA LYS ASP ASN GLN GLN LYS ALA ASN GLU VAL GLU GLN MET ILE ARG ASP LEU GLU ALA SER ILE ALA ARG TYR LYS GLU GLU TYR ALA VAL LEU ILE SER GLU ALA GLN ALA ILE LYS ALA
ASP LEU ALA VAL LEU A3470 K3471 V3472 N3473 R3474 S3475 T3476 A3477 L3478 L3479 K3480 R3488 W3489 T3495 N3498 Q3499 M3500 S3501 T3502 L3508 L3509 S3510 A3511 I3514 A3515 Y3516 L3536 L3553 S3554 N3555 E3558 L3567 T3574 I3578 M3579 R3585 L3588 D3591 P3592 S3593
G3594 Q3595 A3596 T3597 E3598 F3599 I3600 M3601 K3608 R3620 K3621 E3624 R3628 V3638 L3649 R3654 R3655 R3659 V3660 L3661 I3662 T3663 L3664 G3665 D3668 I3669 D3670 L3671 T3681 P3684 T3685 S3694 R3695 V3696 T3697 F3701 T3702 R3705 L3708 V3724 R3741 K3747
S3748 L3749 L3750 L3753 N3754 E3755 V3756 K3757 G3758 R3759 D3762 D3763 D3764 I3767 L3773 E3776 E3779 V3780 T3781 R3782 K3783 V3784 E3785 D3788 I3789 V3797 L3804 S3809 S3810 F3813 E3816 S3817 L3818 L3824 Y3825 I3835 N3838 V3839 L3840 D3851 R3855 L3856
I3859 T3860 V3866 N3869 R3870 R3873 G3874 M3875 I3881 T3882 F3883 A3884 M3885 L3886 L3887 A3888 R3889 I3890 K3893 D3902 A3903 A3918 R3923 I3924 Q3925 V3929 E3930 Q3931 V3935 K3945 I3948 Q3952 F3957 P3966 I3983 G3984 I3987 L3990 F3996 R3997 P3998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V4009 S4010 T4011 N4012 L4013 G4014 E4015
S4019
E4022
V4031
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L4042 M4043
V4055
Q4065
S4068
I4071
F4077
A4080
I4084
V4088
R4092
M4095 L4096
V4099 H4100
P4103 G4104 W4105 L4106 M4107 Q4108 L4109 E4110 K4111
P4118
T4127 M4128 E4129 I4130
K4133
N4137 L4138 L4139
P4149 P4150
V4153
R4159 T4160
P4165
R4168
K4171
E4175 R4176 A4177 R4178 L4179
W4185 F4186 H4187 A4188 I4189 I4190 Q4191 E4192
L4199
Y4205 E4206
L4212
A4215 C4216 D4217
D4220
L4223 D4224
A4227
I4233 S4234 P4235
P4239
A4242 L4243 K4244
M4247
R4255 V4256 D4257
R4263 L4264 L4265 N4266 T4267 F4268 L4269 E4270 R4271
R4276 S4277 F4278
L4284
V4288
I4294 Q4295 M4296 P4297
I4300 R4301 R4302 E4303
V4306 Q4307 W4308
D4314 T4315
R4329 V4330
G4336
I4340
M4343
M4346 Q4347 M4348 L4349 E4350 D4351 E4352 D4353 ASP LEU ALA TYR ALA GLU THR GLU LYS LYS THR ARG THR ASP SER THR SER ASP GLY ARG PRO A4375
T4379 L4380 H4381 T4382 T4383 A4384 S4385 N4386 W4387 L4388 H4389 L4390 I4391
L4395
K4399
V4402 E4403 N4404 I4405 K4406 D4407
F4410 R4411 F4412
A4421 K4422 L4423 L4424
R4428
L4431
V4434
V4437 C4438
K4443 Q4444
L4448
L4451 I4452 N4453 E4454 L4455 V4456 K4457
L4460 P4461 R4462
M4473 T4474
Q4477 W4478 V4479 S4480 D4481 F4482 S4483 E4484 R4485 I4486 K4487 Q4488
I4492
A4496 A4497
L4504 K4505 N4506 I4507
G4513 L4514
F4515 V4516 P4517 E4518
I4521
Y4527
Q4549
D4554 A4555
L4563 K4564
T4569
T4583
L4587 T4588
S4603
L4611
I4619
R4633
Y4636
E4646

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	326895	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS GLACIOS	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2600	Depositor
Magnification	45000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.624	Depositor
Minimum map value	-1.305	Depositor
Average map value	-0.003	Depositor
Map value standard deviation	0.037	Depositor
Recommended contour level	0.15	Depositor
Map size (Å)	444.416, 444.416, 444.416	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.736, 1.736, 1.736	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.13	0/24989	0.34	0/33856

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	2597	PRO	Peptide

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	24471	0	24528	609	0
2	A	54	0	24	7	0

Continued on next page...

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	31	0	12	6	0
4	A	31	0	13	4	0
5	A	1	0	0	0	0
All	All	24588	0	24577	609	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 12.

The worst 5 of 609 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)
1:A:3194:LEU:HD22	1:A:3500:MET:HE3	1.57	0.87
1:A:2603:MET:HE2	4:A:4703:ANP:H5'2	1.60	0.82
1:A:2387:LEU:HB3	1:A:2467:ARG:HH21	1.44	0.80
1:A:3817:SER:HB3	1:A:4349:LEU:HD21	1.63	0.80
1:A:2386:PRO:HA	1:A:2416:GLN:HE22	1.47	0.79

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	A	3028/4646 (65%)	2937 (97%)	91 (3%)	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	A	2703/4125 (66%)	2703 (100%)	0	100 100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 27 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3837	HIS
1	A	4078	ASN
1	A	4532	ASN
1	A	3931	GLN
1	A	4098	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 5 ligands modelled in this entry, 1 is monoatomic - leaving 4 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	ANP	A	4703	-	29,33,33	2.54	7 (24%)	31,52,52	1.71	7 (22%)
2	ADP	A	4701	-	24,29,29	0.92	1 (4%)	29,45,45	1.23	2 (6%)
2	ADP	A	4704	-	24,29,29	0.91	0	29,45,45	1.18	2 (6%)
3	ATP	A	4702	5	28,33,33	0.74	0	34,52,52	0.61	1 (2%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	ANP	A	4703	-	-	5/14/38/38	0/3/3/3
2	ADP	A	4701	-	-	4/12/32/32	0/3/3/3
2	ADP	A	4704	-	-	4/12/32/32	0/3/3/3
3	ATP	A	4702	5	-	7/18/38/38	0/3/3/3

The worst 5 of 8 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	4703	ANP	PB-O3A	9.14	1.70	1.59
4	A	4703	ANP	PG-N3B	6.20	1.79	1.63
4	A	4703	ANP	PG-O1G	4.80	1.53	1.46
4	A	4703	ANP	PB-O1B	2.78	1.50	1.46
4	A	4703	ANP	C8-N7	-2.43	1.30	1.34

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	4703	ANP	O2B-PB-O1B	4.52	119.57	109.87
4	A	4703	ANP	O1G-PG-N3B	-4.04	105.82	111.77
2	A	4701	ADP	N3-C2-N1	-3.83	123.47	128.67
2	A	4704	ADP	N3-C2-N1	-3.59	123.80	128.67
2	A	4704	ADP	C4-C5-N7	-2.62	106.57	109.34

There are no chirality outliers.

5 of 20 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	4701	ADP	O4'-C4'-C5'-O5'
2	A	4704	ADP	C5'-O5'-PA-O3A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	A	4702	ATP	PB-O3B-PG-O3G
3	A	4702	ATP	C5'-O5'-PA-O3A
4	A	4703	ANP	PB-N3B-PG-O1G

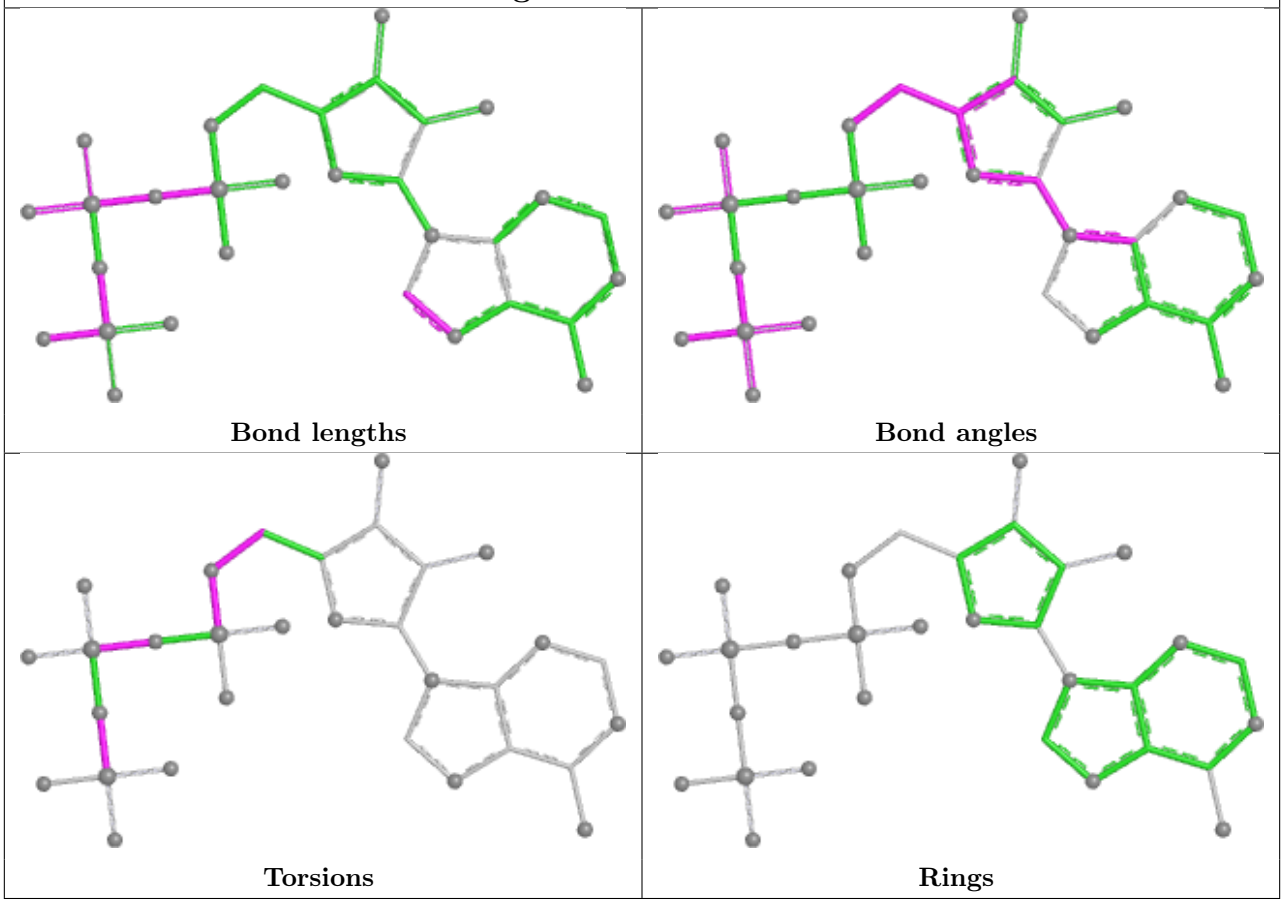
There are no ring outliers.

4 monomers are involved in 17 short contacts:

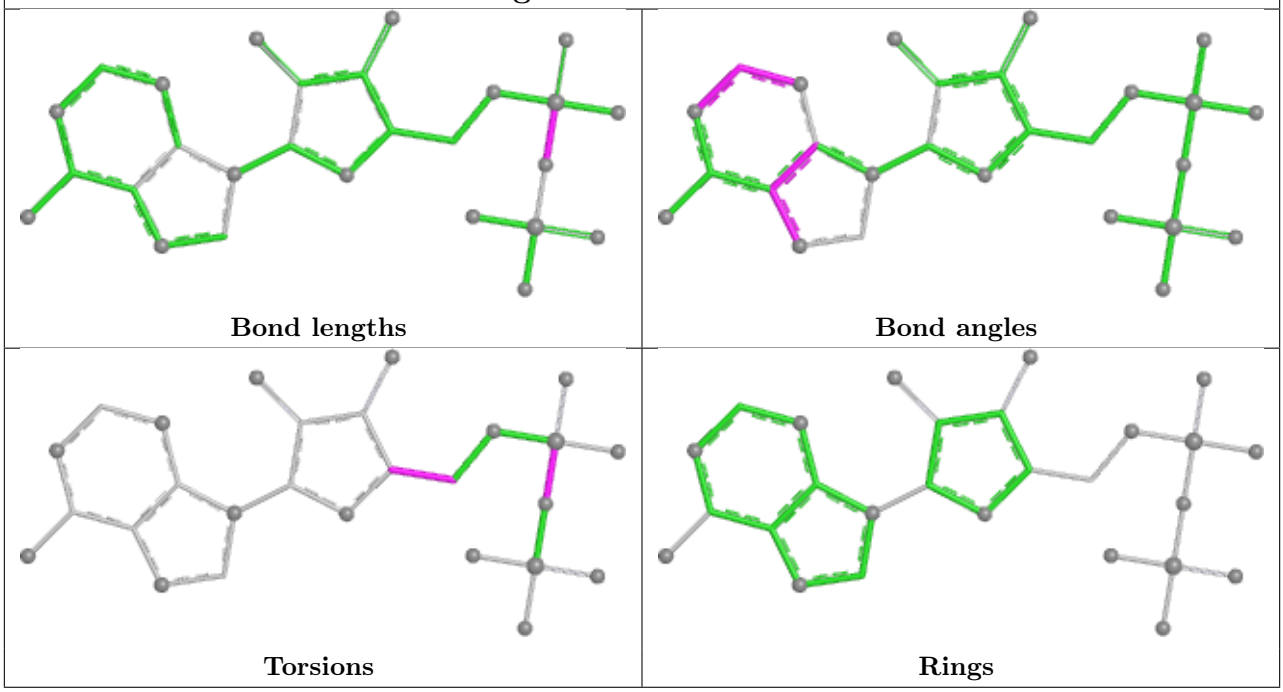
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	4703	ANP	4	0
2	A	4701	ADP	4	0
2	A	4704	ADP	3	0
3	A	4702	ATP	6	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

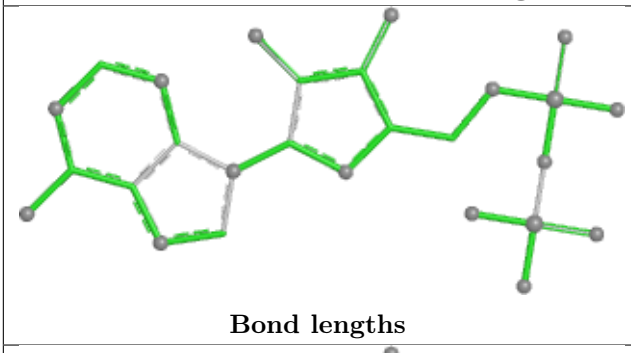
Ligand ANP A 4703



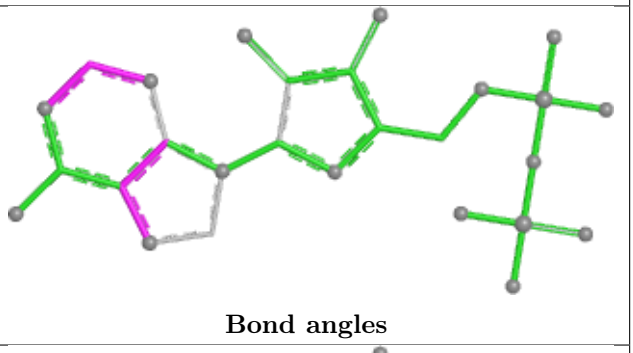
Ligand ADP A 4701



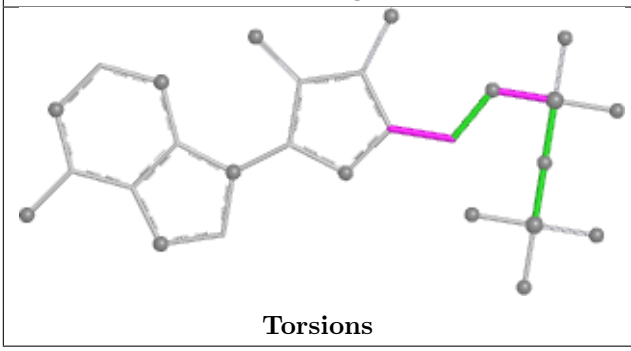
Ligand ADP A 4704



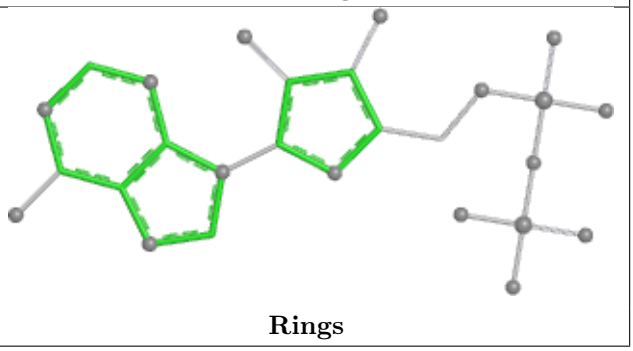
Bond lengths



Bond angles

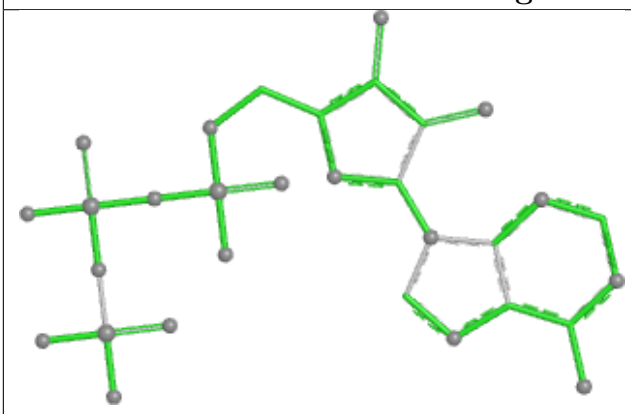


Torsions

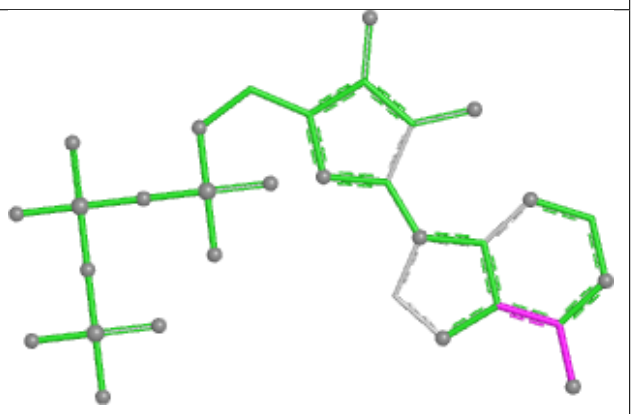


Rings

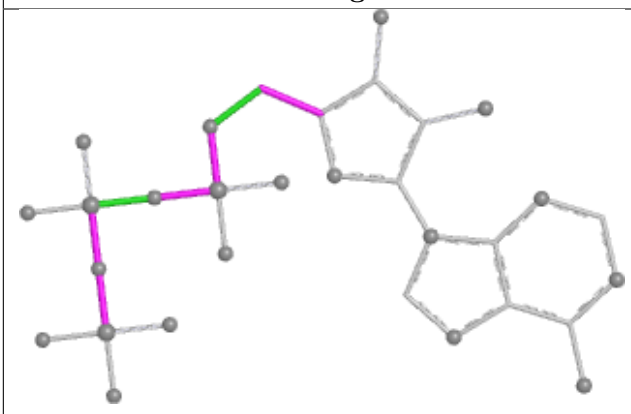
Ligand ATP A 4702



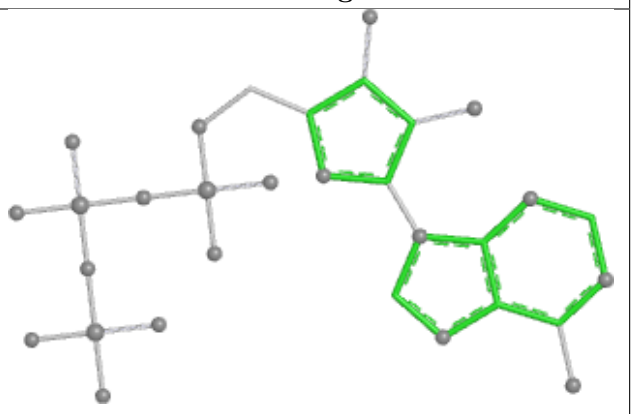
Bond lengths



Bond angles



Torsions



Rings

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.

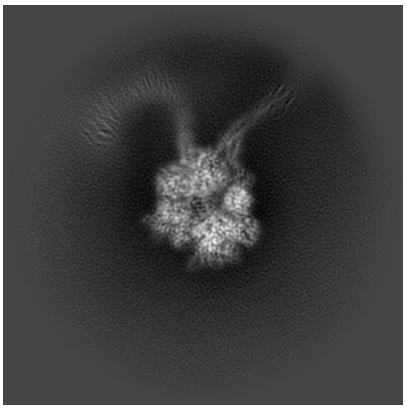
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-73176. These allow visual inspection of the internal detail of the map and identification of artifacts.

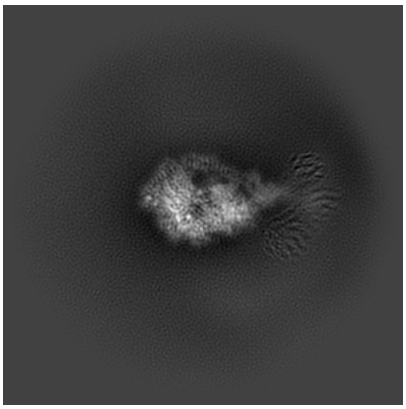
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

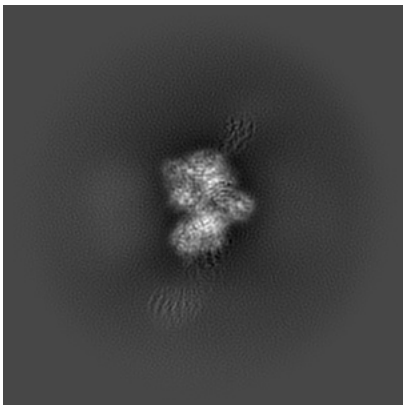
6.1.1 Primary map



X

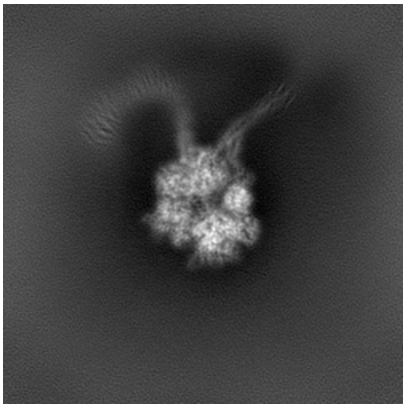


Y

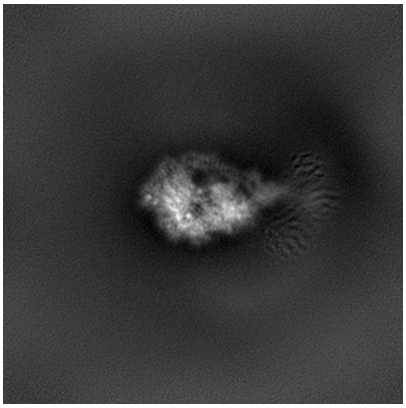


Z

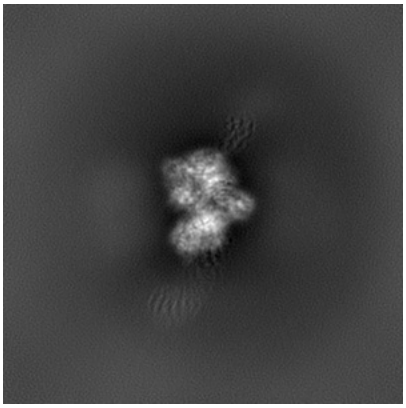
6.1.2 Raw map



X



Y

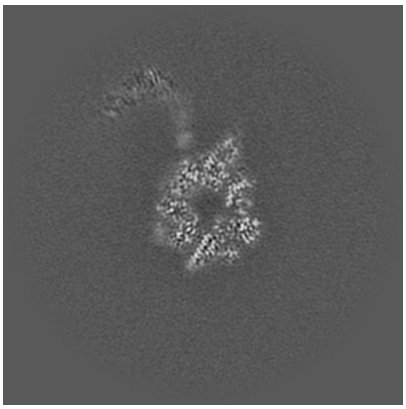


Z

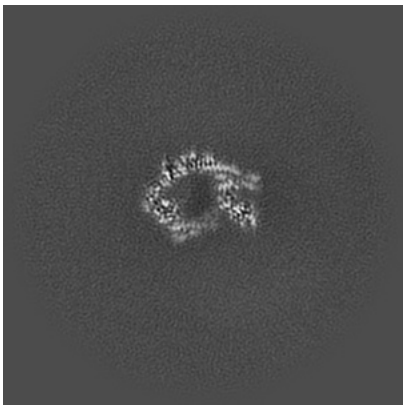
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

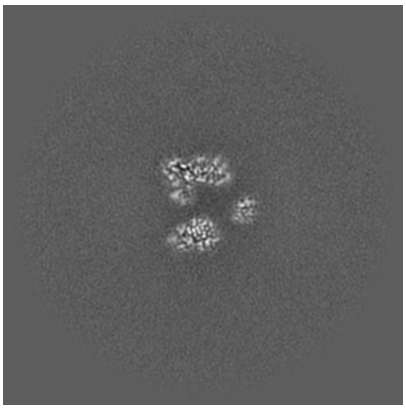
6.2.1 Primary map



X Index: 128

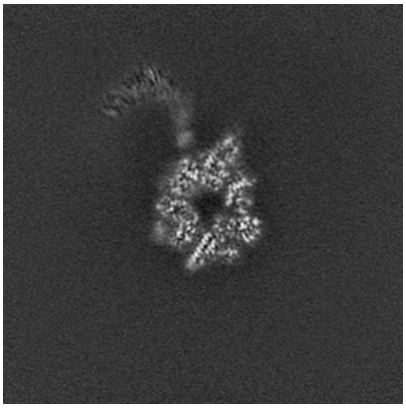


Y Index: 128

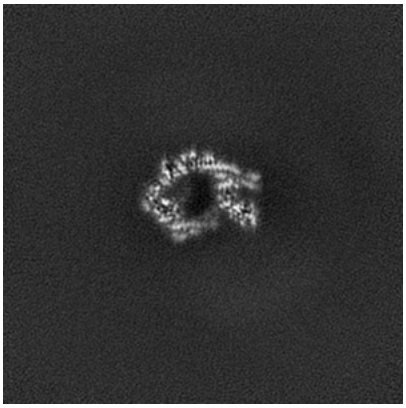


Z Index: 128

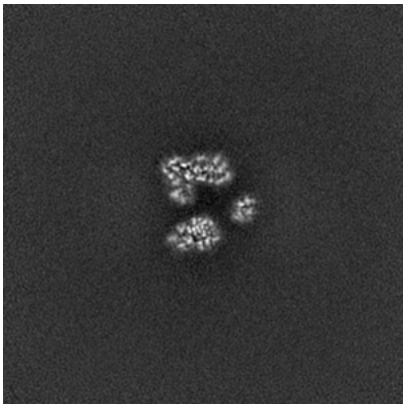
6.2.2 Raw map



X Index: 128



Y Index: 128

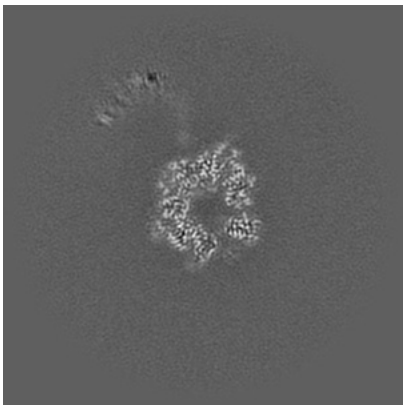


Z Index: 128

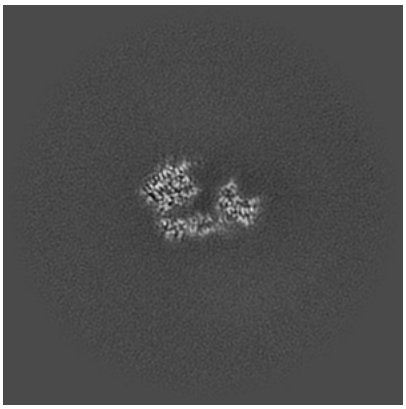
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

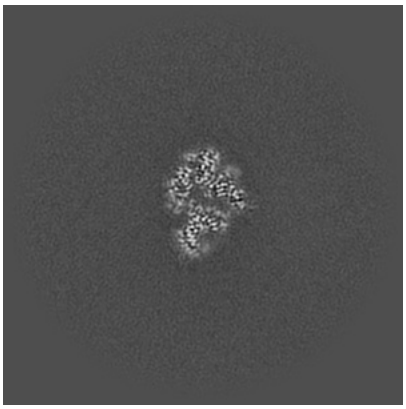
6.3.1 Primary map



X Index: 125

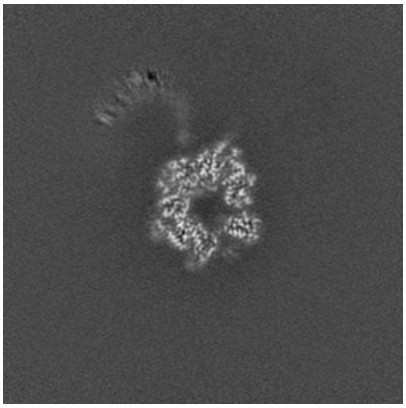


Y Index: 135

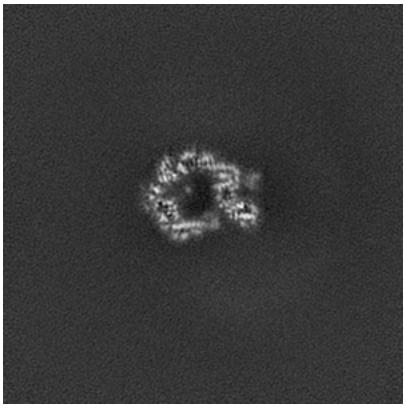


Z Index: 112

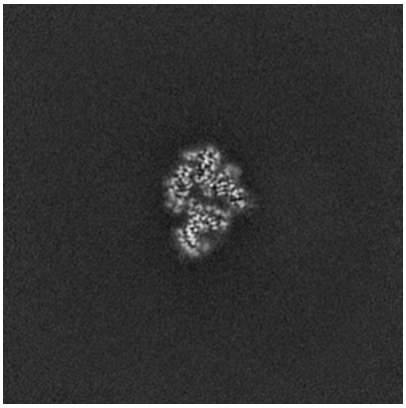
6.3.2 Raw map



X Index: 125



Y Index: 129

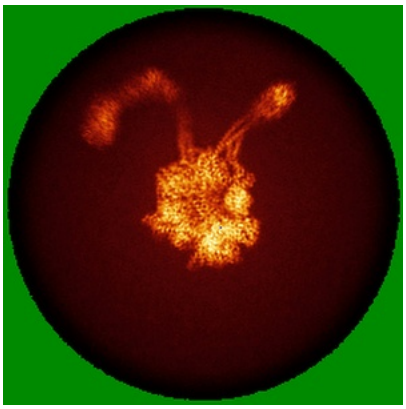


Z Index: 112

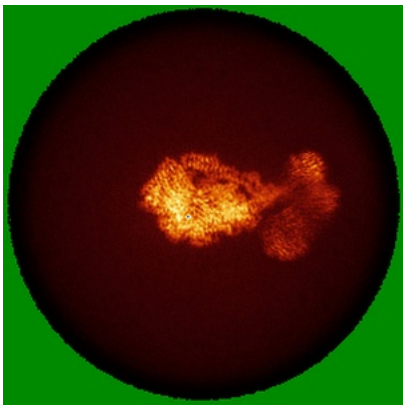
The images above show the largest variance slices of the map in three orthogonal directions.

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

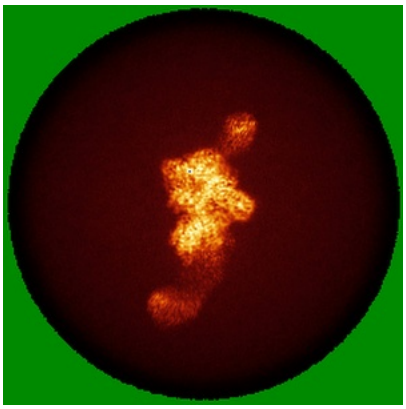
6.4.1 Primary map



X

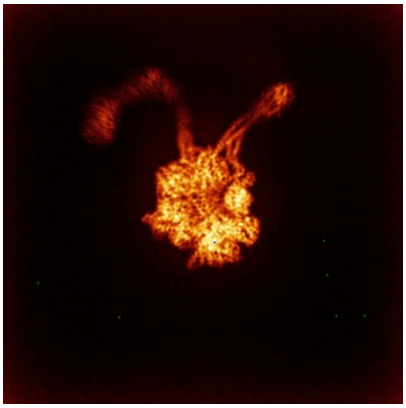


Y

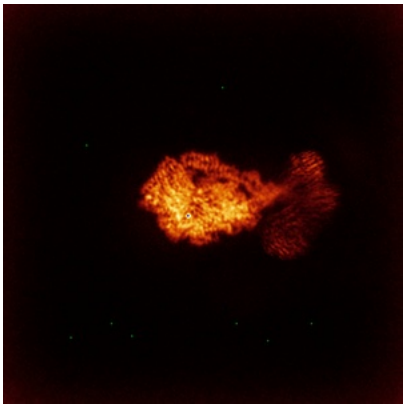


Z

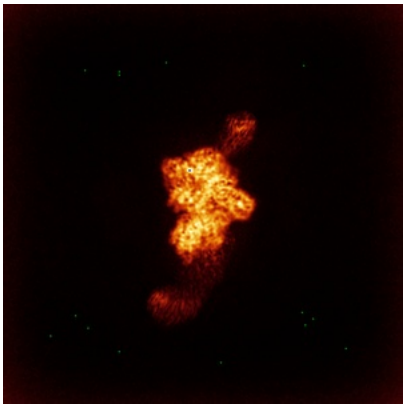
6.4.2 Raw map



X



Y

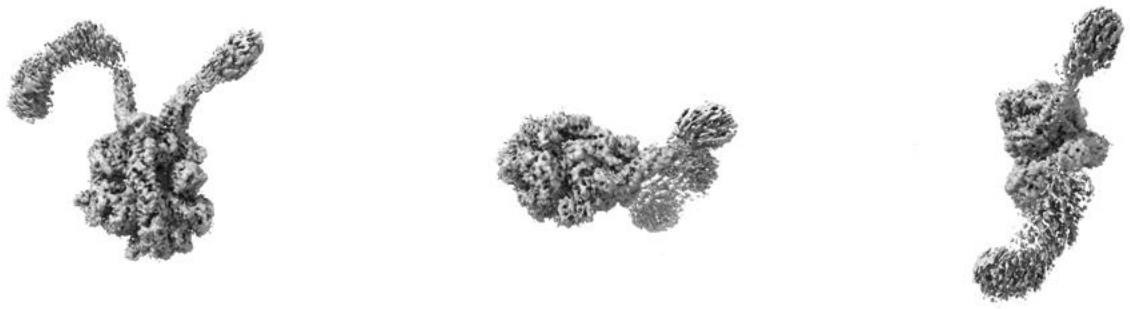


Z

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)

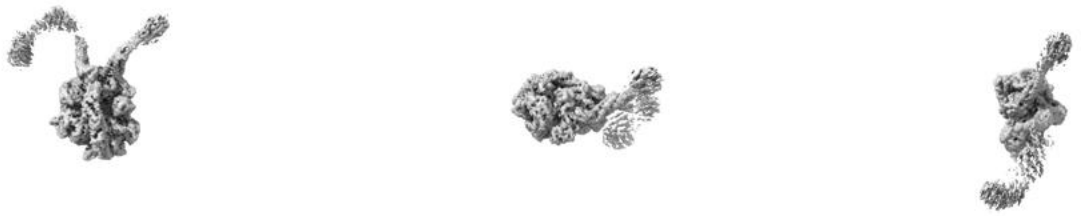
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.15. 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.

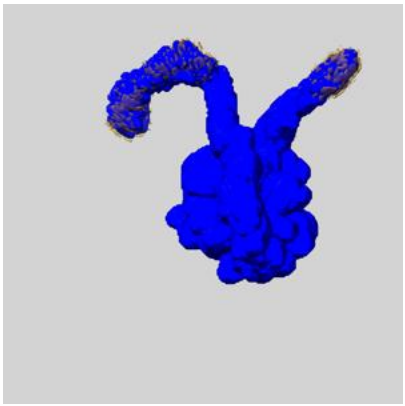
6.6 Mask visualisation

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

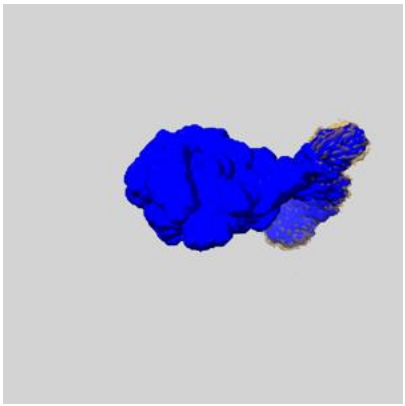
A mask typically either:

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

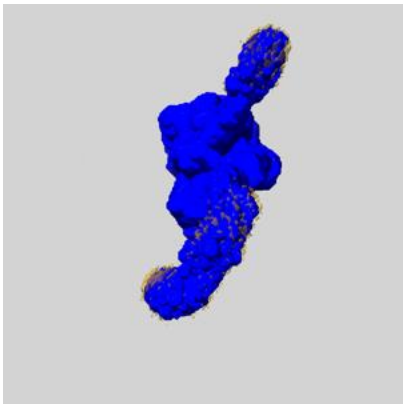
6.6.1 emd_73176_msk_1.map



X



Y

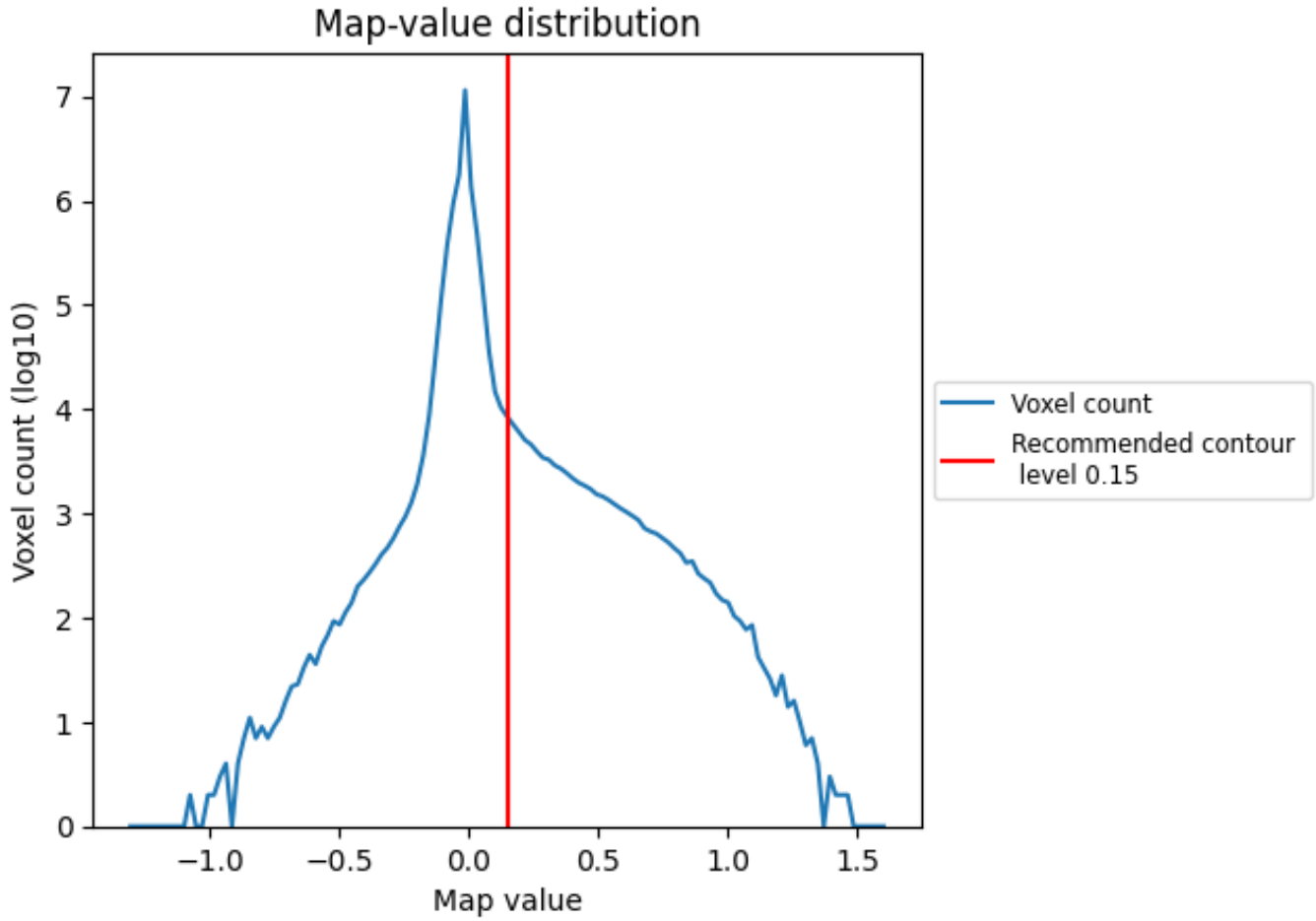


Z

7 Map analysis

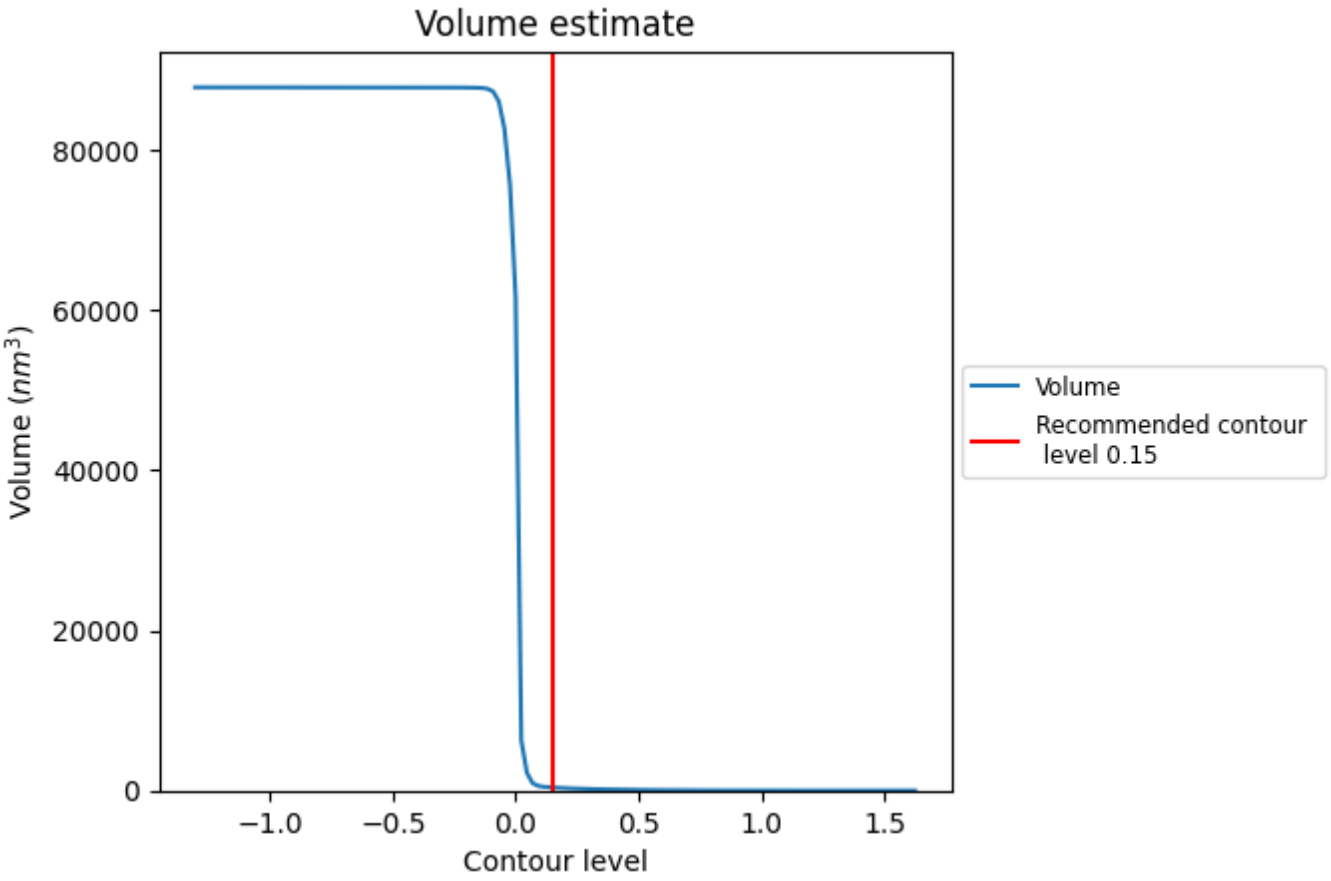
This section contains the results of statistical analysis of the map.

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.

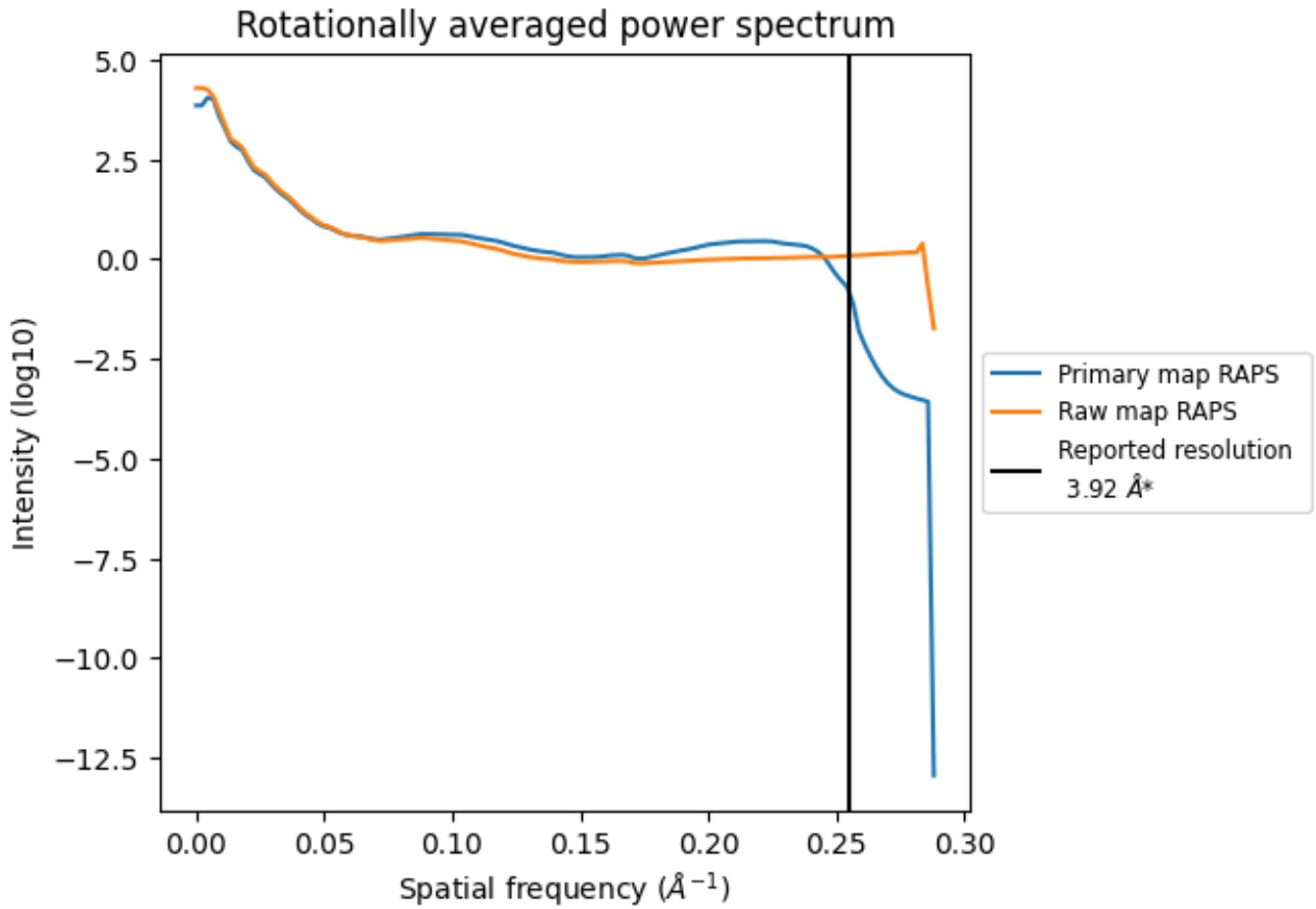
7.2 Volume estimate (i)



The volume at the recommended contour level is 383 nm^3; this corresponds to an approximate mass of 346 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)

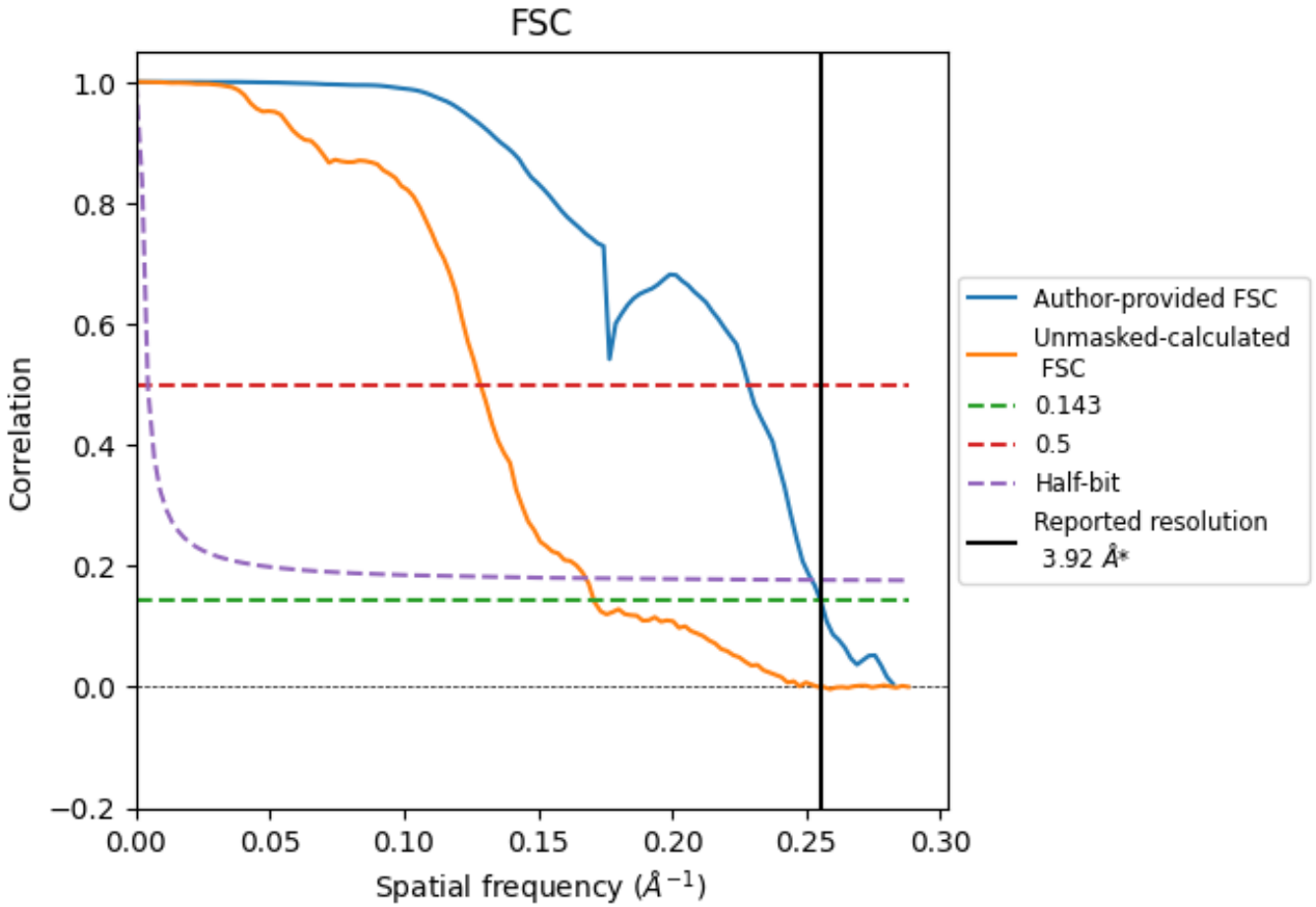


*Reported resolution corresponds to spatial frequency of 0.255 $Å^{-1}$

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 0.255 Å^{-1}

8.2 Resolution estimates (i)

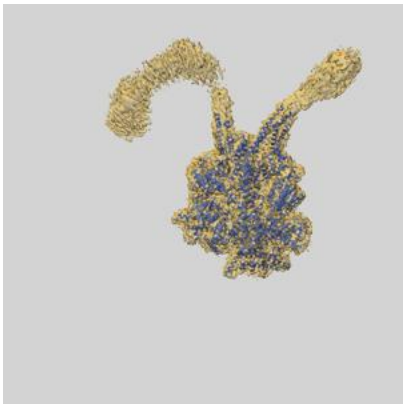
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.92	-	-
Author-provided FSC curve	3.92	4.38	3.97
Unmasked-calculated*	5.85	7.79	5.96

*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 5.85 differs from the reported value 3.92 by more than 10 %

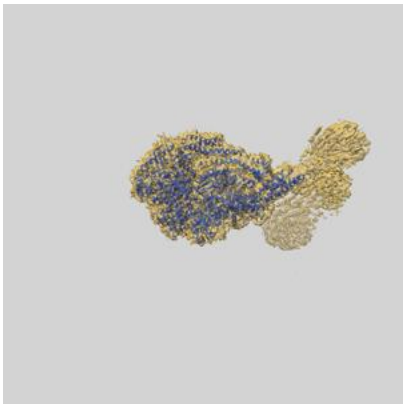
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-73176 and PDB model 9YNF. Per-residue inclusion information can be found in section 3 on page 6.

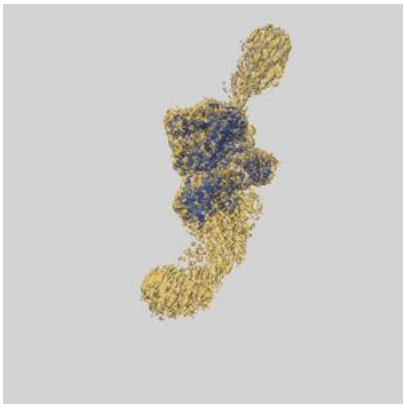
9.1 Map-model overlay



X



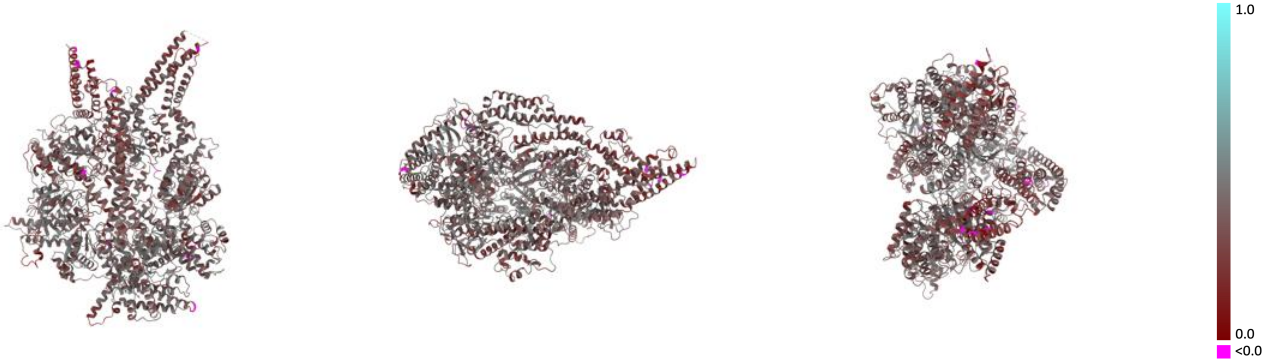
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.15 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.

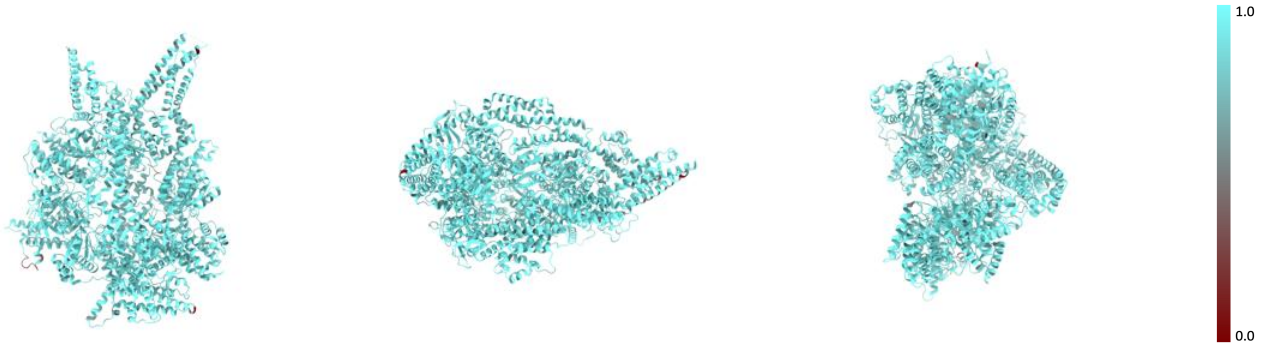
9.2 Q-score mapped to coordinate model (i)



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.

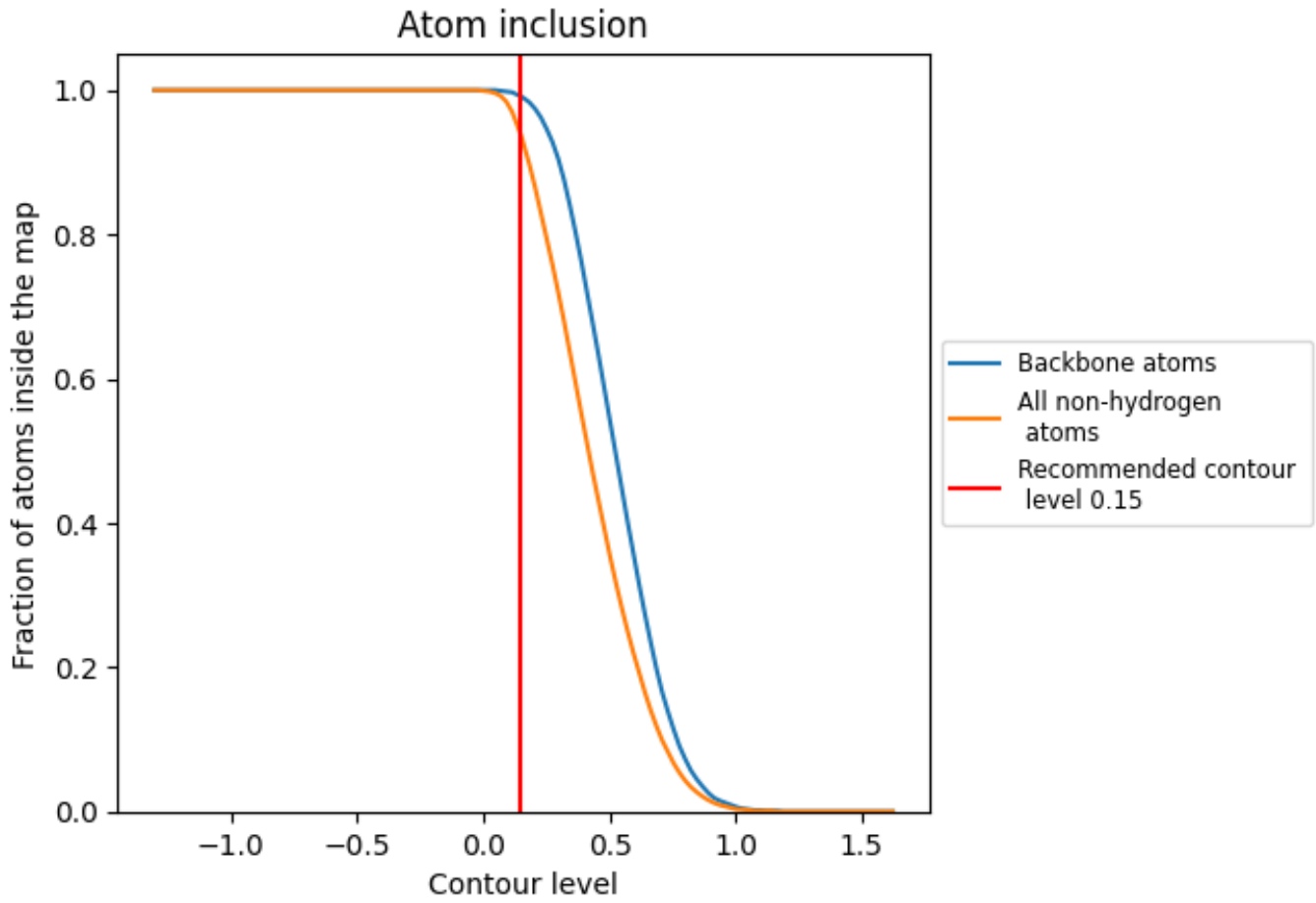
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.15).

9.4 Atom inclusion (i)



At the recommended contour level, 99% of all backbone atoms, 94% 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 (0.15) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9370	0.3720
A	0.9370	0.3720