Full wwPDB EM Validation Report

Mar 23, 2026 – 12:24 PM UTC

PDB ID	:	9BN0 / pdb_00009bn0
EMDB ID	:	EMD-44717
Title	:	State-7 of motor domain from full-length human dynein-1 in apo condition
Authors	:	Chai, P.; Zhang, K.
Deposited on	:	2024-05-02
Resolution	:	3.60 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:

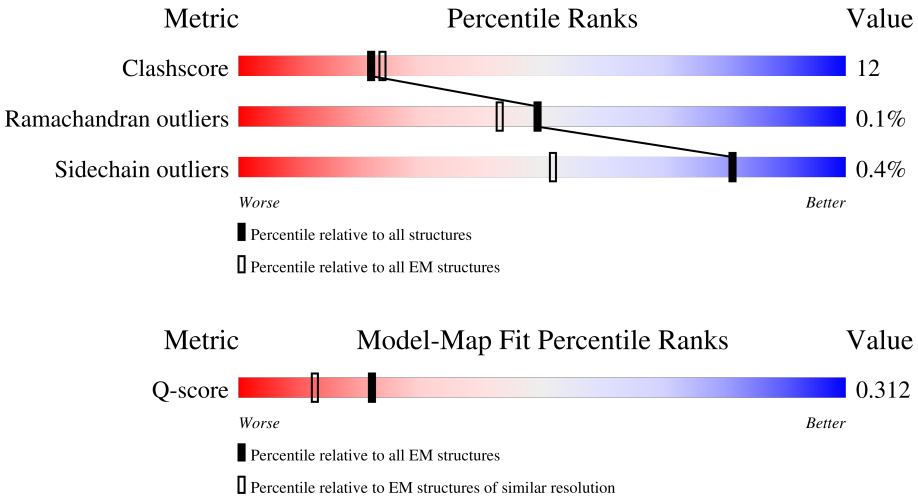
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data 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)	:	2.49

1 Overall quality at a glance

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

The reported resolution of this entry is 3.60 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	12797 (3.10 - 4.10)

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	8% 47% 16% 37%

2 Entry composition

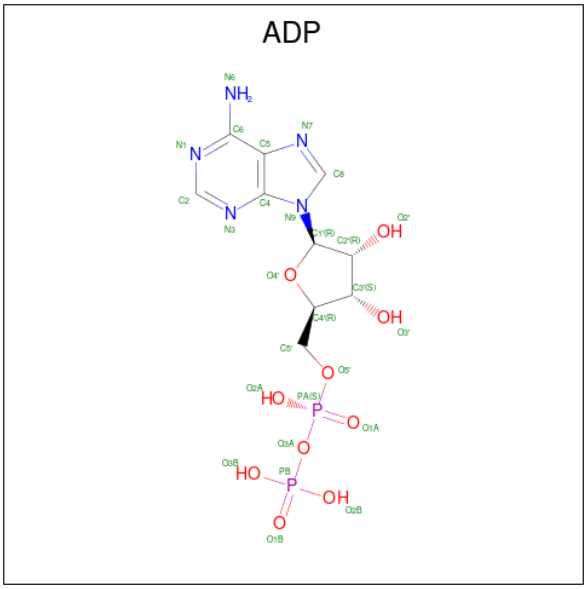
There are 4 unique types of molecules in this entry. The entry contains 23497 atoms, of which 0 are hydrogens and 0 are deuteriums.

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.

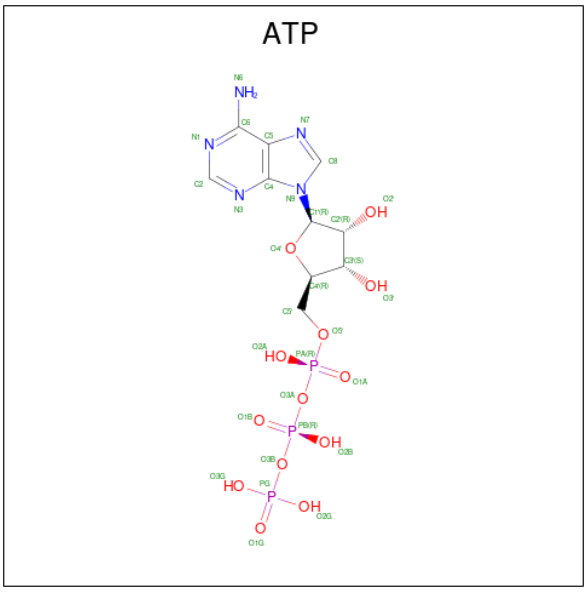
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	2909	23384	14885	4038	4344	117	0	0

- 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
			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	

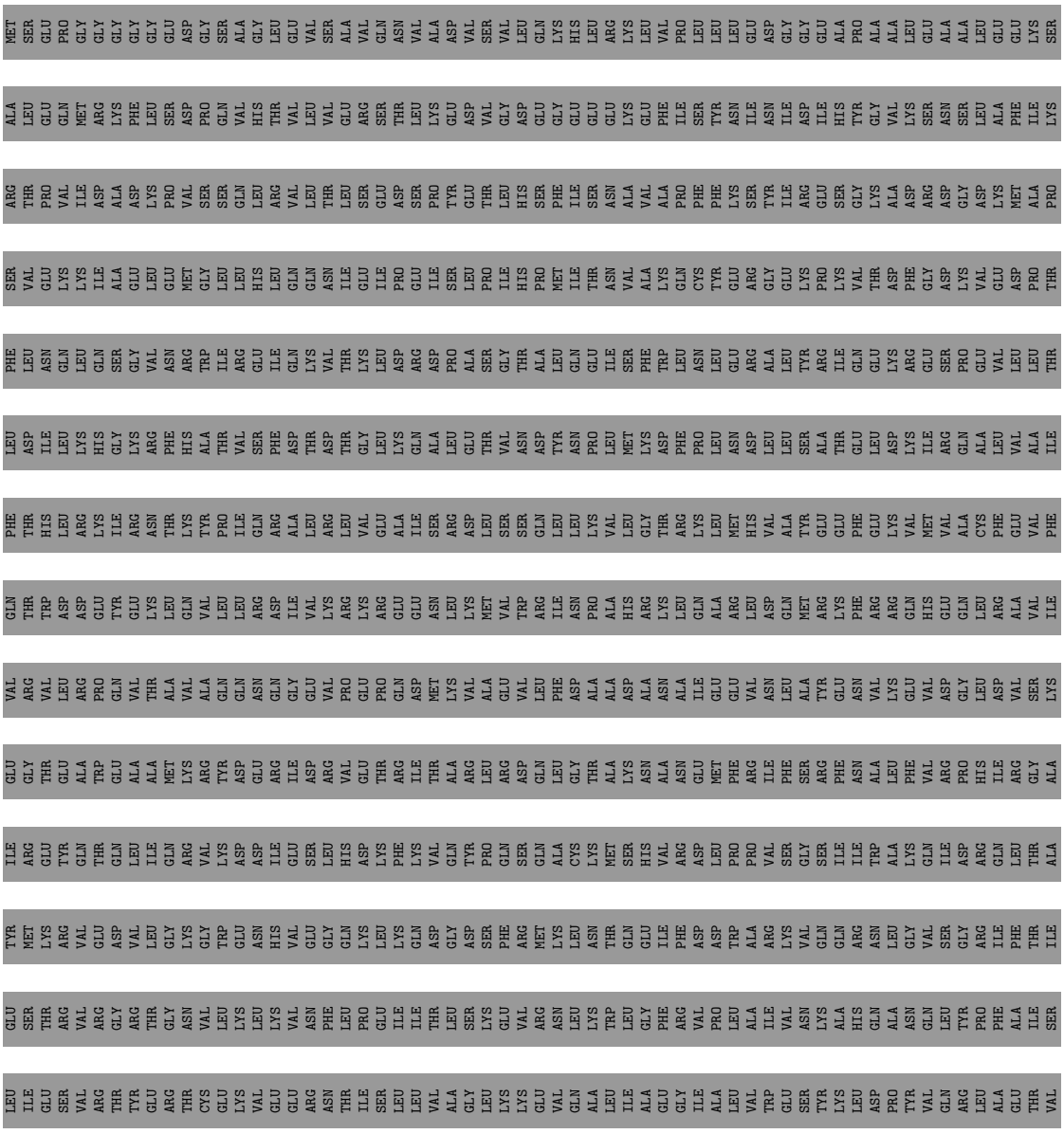
- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

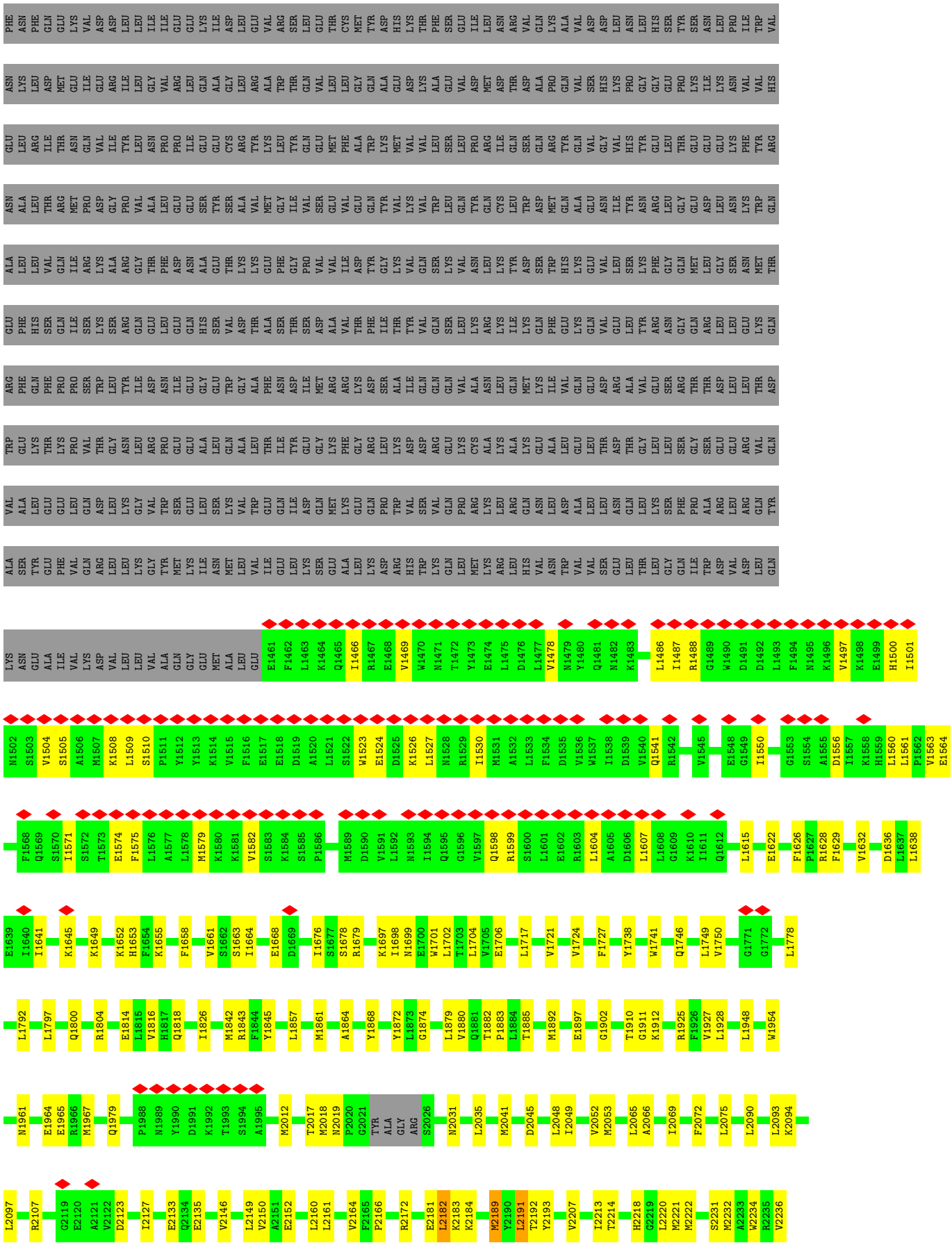
Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	Mg	0
			1	1	

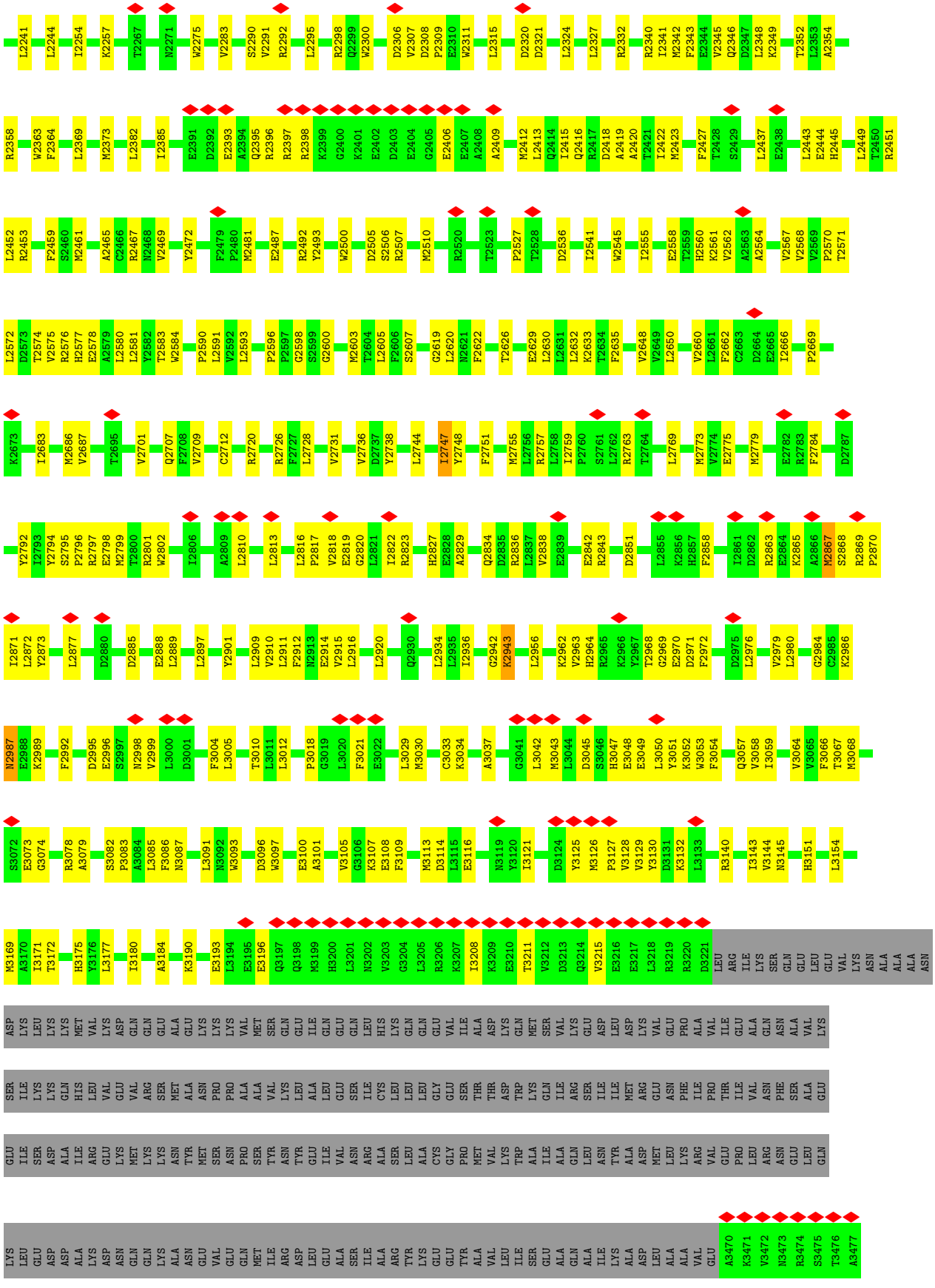
3 Residue-property plots (i)

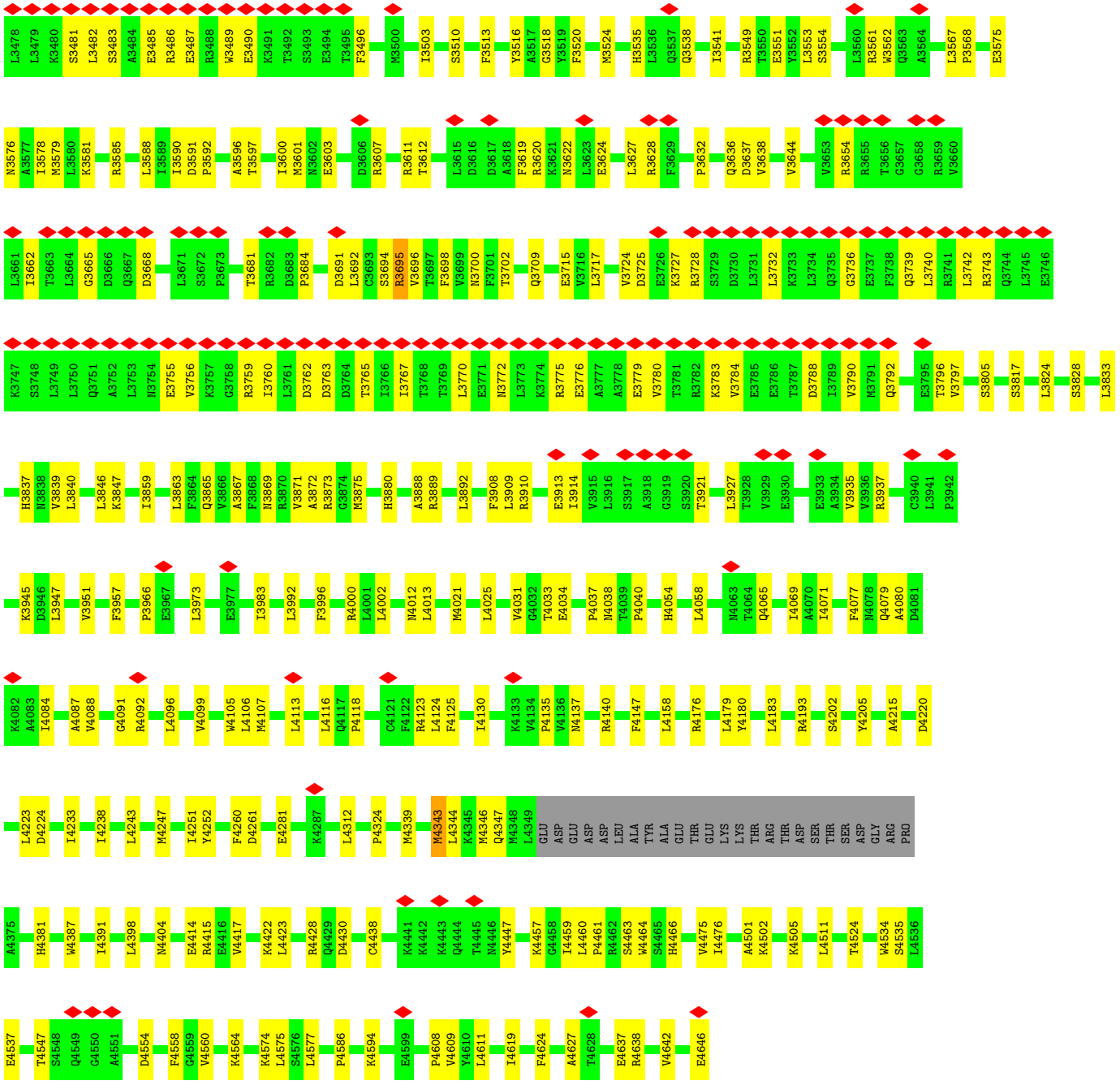
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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






L2241 L2244 I2254 K2257 T2267 N2271 W2275 V2283 S2290 V2291 R2292 L2295 R2298 Q2299 W2300 D2306 V2307 D2308 P2309 E2310 W2311 L2315 D2320 D2321 L2324 L2327 R2332 R2340 I2341 M2342 F2343 E2344 V2345 Q2346 D2347 L2348 K2349 T2352 L2353 A2354
R2358 W2363 F2364 L2369 M2373 L2382 I2385 E2391 D2392 E2393 A2394 Q2395 R2396 R2397 R2398 K2399 G2400 K2401 E2402 D2403 E2404 G2405 E2406 E2407 A2408 A2409 M2412 L2413 Q2414 I2415 Q2416 R2417 D2418 A2419 A2420 T2421 I2422 M2423 F2427 T2428 S2429 L2437 E2438 L2443 E2444 H2445 L2449 T2450 R2451
L2452 R2453 F2459 S2460 M2461 A2465 C2466 R2467 N2468 V2469 Y2472 F2479 P2480 M2481 E2487 R2492 Y2493 W2500 D2505 S2506 R2507 M2510 R2520 T2523 P2527 T2528 D2536 I2541 W2545 I2555 E2558 T2559 H2560 K2561 V2562 A2563 A2564 V2567 V2568 V2569 P2570 T2571
L2572 D2573 T2574 V2575 R2576 H2577 E2578 A2579 L2580 L2581 Y2582 T2583 W2584 P2590 L2591 V2592 L2593 P2596 P2597 G2598 S2599 G2600 M2603 T2604 L2605 F2606 S2607 G2619 L2620 N2621 F2622 T2626 E2629 L2630 L2631 L2632 K2633 T2634 F2635 V2648 V2649 L2650 V2660 L2661 F2662 C2663 D2664 E2665 I2666 P2669
K2673 I2683 M2686 V2687 T2695 V2701 Q2707 F2708 V2709 C2712 R2720 R2726 F2727 L2728 V2731 V2736 D2737 Y2738 L2744 I2747 Y2748 F2751 M2755 L2766 R2757 L2758 I2759 P2760 S2761 L2762 R2763 T2764 L2769 M2773 V2774 E2775 M2779 E2782 R2783 F2784 D2787
Y2792 I2793 Y2794 S2795 P2796 R2797 E2798 M2799 T2800 R2801 W2802 I2806 A2809 L2810 L2813 L2816 P2817 V2818 E2819 G2820 L2821 I2822 R2823 H2827 E2828 A2829 Q2834 D2835 R2836 L2837 V2838 E2839 E2842 R2843 D2851 L2855 K2856 H2857 F2858 I2861 D2862 R2863 E2864 K2865 A2866 M2867 S2868 R2869 P2870
I2871 L2872 Y2873 L2877 D2880 D2885 E2888 L2889 L2897 Y2901 L2909 V2910 L2911 F2912 N2913 E2914 V2915 L2916 L2920 Q2930 L2934 I2935 I2936 G2942 K2943 L2956 K2962 V2963 H2964 R2965 K2966 Y2967 T2968 G2969 E2970 D2971 F2972 D2975 L2976 V2979 L2980 G2984 G2985 K2986
N2987 E2988 K2989 F2992 D2995 E2996 S2997 N2998 V2999 L3000 D3001 F3004 L3005 T3010 L3011 L3012 P3018 G3019 L3020 F3021 E3022 L3029 M3030 C3033 K3034 A3037 G3041 L3042 M3043 L3044 D3045 S3046 H3047 E3048 E3049 L3050 Y3051 K3052 W3053 F3054 Q3057 V3058 I3059 V3064 V3065 F3066 T3067 M3068
S3072 E3073 G3074 R3078 A3079 S3082 P3083 A3084 L3085 F3086 N3087 L3091 N3092 W3093 D3096 W3097 E3100 A3101 V3105 G3106 K3107 E3108 F3109 M3113 D3114 L3115 E3116 N3119 Y3120 I3121 D3124 Y3125 M3126 P3127 V3128 V3129 Y3130 D3131 K3132 L3133 R3140 I3143 V3144 N3145 H3151 I3154
M3169 A3170 I3171 T3172 H3175 Y3176 L3177 I3180 A3184 K3190 E3193 L3194 E3195 E3196 Q3197 Q3198 M3199 H3200 L3201 N3202 V3203 G3204 L3205 R3206 K3207 I3208 K3209 E3210 T3211 V3212 D3213 Q3214 V3215 E3216 E3217 L3218 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 LYS VAL MET SER GLN GLU ILE GLN GLU GLN LEU HIS LYS GLN GLN GLU GLU VAL ILE ALA ASP LYS GLN MET SER VAL LYS GLU ASP 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 VAL LYS LEU ALA LEU GLU GLN SER ILE CYS LEU LEU LEU GLY GLU SER THR THR ASP LYS GLN ILE ILE ARG SER ILE 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 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 GLY PRO MET VAL LYS TRP ALA ILE ILE ALA GLN LEU ASN TYR ALA ASP MET LEU LYS ARG GLU 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 ALA VAL LEU ILE SER GLU ALA GLN ALA ILE LYS ALA ASP LEU ALA ALA ALA VAL GLU A3470 K3471 V3472 N3473 R3474 S3475 T3476 A3477


L3478 L3479 K3480 S3481 L3482 S3483 A3484 E3485 R3486 E3487 R3488 W3489 E3490 K3491 T3492 S3493 E3494 T3495 F3496 M3500 I3503 S3510 F3513 Y3516 A3517 G3518 Y3519 F3520 M3524 H3535 L3536 Q3537 Q3538 I3541 R3549 T3550 E3551 Y3552 L3553 S3554 L3560 R3561 W3562 Q3563 A3564 L3567 P3568 E3575
N3576 A3577 I3578 M3579 L3580 K3581 R3585 L3588 I3589 I3590 D3591 P3592 A3596 T3597 I3600 M3601 N3602 E3603 D3606 R3607 R3611 T3612 L3615 D3616 D3617 A3618 F3619 R3620 K3621 N3622 L3623 E3624 L3627 R3628 F3629 P3632 Q3636 D3637 V3638 V3644 V3653 R3654 R3655 T3656 G3657 G3658 R3659 V3660
L3661 I3662 T3663 L3664 G3665 D3666 Q3667 D3668 L3671 S3672 P3673 T3681 R3682 D3683 P3684 D3691 L3692 C3693 S3694 R3695 V3696 T3697 F3698 V3699 N3700 F3701 T3702 Q3709 E3715 V3716 L3717 V3724 D3725 E3726 K3727 R3728 S3729 D3730 L3731 L3732 K3733 L3734 Q3735 G3736 E3737 F3738 Q3739 L3740 R3741 L3742 R3743 Q3744 L3745 E3746
K3747 S3748 L3749 L3750 Q3751 A3752 L3753 N3754 E3755 V3756 K3757 G3758 R3759 I3760 L3761 D3762 D3763 D3764 T3765 I3766 I3767 T3768 T3769 L3770 E3771 N3772 L3773 K3774 R3775 E3776 A3777 A3778 E3779 V3780 T3781 R3782 K3783 V3784 E3785 E3786 T3787 D3788 I3789 V3790 M3791 Q3792 E3795 T3796 V3797 S3805 S3817 L3824 S3828 L3833
H3837 N3838 V3839 L3840 L3846 K3847 I3859 L3863 F3864 Q3865 V3866 A3867 F3868 N3869 R3870 V3871 A3872 R3873 G3874 M3875 H3880 A3888 R3889 L3892 F3908 L3909 R3910 E3913 I3914 V3915 L3916 S3917 A3918 G3919 S3920 T3921 L3927 T3928 V3929 E3930 E3933 A3934 V3935 V3936 R3937 C3940 L3941 P3942
K3945 D3946 L3947 V3951 F3957 P3966 E3967 L3973 E3977 I3983 L3992 F3996 R4000 L4001 L4002 M4012 L4013 M4021 L4025 V4031 G4032 T4033 E4034 P4037 N4038 T4039 P4040 H4054 L4058 N4063 T4064 Q4065 I4069 A4070 I4071 F4077 N4078 Q4079 A4080 D4081
K4082 A4083 I4084 A4087 V4088 G4091 R4092 L4096 V4099 W4105 L4106 M4107 L4113 L4116 Q4117 P4118 C4121 F4122 R4123 L4124 F4125 I4130 K4133 V4134 P4135 V4136 M4137 R4140 F4147 L4158 R4176 L4179 Y4180 L4183 R4193 S4202 Y4205 A4215 D4220
L4223 D4224 I4233 I4238 L4243 M4247 I4251 Y4252 F4260 D4261 E4281 K4287 L4312 P4324 M4339 M4343 L4344 K4345 M4346 Q4347 M4348 L4349 GLU ASP GLU ASP ASP LEU ALA TYR ALA GLU THR GLU LYS LYS THR ARG THR ASP SER THR SER ASP GLY ARG PRO
A4375 H4381 W4387 I4391 L4398 N4404 E4414 R4415 E4416 V4417 K4422 L4423 R4428 Q4429 D4430 C4438 K4441 K4442 K4443 Q4444 T4445 N4446 Y4447 K4457 G4458 I4459 L4460 P4461 R4462 S4463 W4464 S4465 H4466 V4475 I4476 A4501 K4502 K4505 L4511 T4524 W4534 S4535 L4536
E4537 T4547 S4548 Q4549 G4550 A4551 D4554 F4558 G4559 V4560 K4564 K4574 L4575 S4576 L4577 P4586 K4594 E4599 P4608 V4609 Y4610 L4611 I4619 F4624 A4627 T4628 E4637 R4638 V4642 E4646

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	67545	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)	3000	Depositor
Magnification	45000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.172	Depositor
Minimum map value	-0.520	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.032	Depositor
Recommended contour level	0.15	Depositor
Map size (Å)	333.312, 333.312, 333.312	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.302, 1.302, 1.302	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ADP, MG, 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	0.28	0/23881	0.42	1/32360 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	3129	VAL	N-CA-C	-5.20	107.76	113.43

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	3695	ARG	Sidechain

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	23384	0	23414	546	0
2	A	81	0	36	9	0
3	A	31	0	12	2	0
4	A	1	0	0	0	0
All	All	23497	0	23462	546	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.

All (546) 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:3034:LYS:HA	1:A:3050:LEU:HD22	1.57	0.86
1:A:1882:THR:HA	1:A:2048:LEU:HD23	1.62	0.81
1:A:2581:LEU:HD22	1:A:2591:LEU:HD21	1.68	0.76
1:A:3601:MET:HE1	1:A:3611:ARG:HB2	1.68	0.75
1:A:2320:ASP:OD2	1:A:2321:ASP:N	2.20	0.75
1:A:2823:ARG:HH12	1:A:2868:SER:H	1.34	0.75
1:A:2970:GLU:N	1:A:2970:GLU:OE1	2.19	0.74
1:A:2192:THR:HB	1:A:2373:MET:HG2	1.71	0.73
1:A:3042:LEU:HD12	1:A:3053:TRP:CD1	2.25	0.71
1:A:4574:LYS:HB3	1:A:4627:ALA:HB2	1.70	0.70
1:A:2999:VAL:HG21	1:A:3068:MET:HE1	1.74	0.70
1:A:4099:VAL:HB	1:A:4106:LEU:HD21	1.74	0.69
1:A:3772:ASN:HD22	1:A:3775:ARG:NH2	1.90	0.69
1:A:4033:THR:HG22	1:A:4034:GLU:HG3	1.74	0.69
1:A:1698:ILE:HD13	1:A:1701:TRP:HE1	1.58	0.69
1:A:3127:PRO:HB2	1:A:3535:HIS:CE1	2.28	0.69
1:A:1478:VAL:HB	1:A:1488:ARG:HH21	1.56	0.68
1:A:3128:VAL:HA	1:A:3145:ASN:HD21	1.59	0.68
1:A:3888:ALA:HA	1:A:4013:LEU:HD21	1.76	0.68
1:A:2797:ARG:HH12	1:A:3087:ASN:HB3	1.59	0.68
1:A:2816:LEU:HD12	1:A:2817:PRO:HD2	1.76	0.68
1:A:2593:LEU:HD13	1:A:2605:LEU:HD12	1.77	0.67
1:A:4505:LYS:NZ	1:A:4554:ASP:O	2.24	0.67
1:A:3839:VAL:HG21	1:A:3863:LEU:HA	1.76	0.67
1:A:3130:TYR:CE2	1:A:3132:LYS:HB2	2.29	0.67
1:A:3177:LEU:O	1:A:3180:ILE:HG22	1.95	0.66
1:A:3742:LEU:HD11	1:A:3780:VAL:HG21	1.77	0.66
1:A:4564:LYS:HG3	1:A:4646:GLU:HB2	1.76	0.66
1:A:2221:MET:HE1	1:A:2348:LEU:HD21	1.78	0.65
1:A:3914:ILE:HB	1:A:3937:ARG:HD2	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2963:VAL:HB	1:A:2998:ASN:HB3	1.78	0.65
1:A:2748:TYR:CE2	1:A:2799:MET:HB3	2.33	0.64
1:A:3612:THR:OG1	1:A:3622:ASN:ND2	2.29	0.64
1:A:3739:GLN:HA	1:A:3742:LEU:HD12	1.80	0.64
1:A:4457:LYS:HB3	1:A:4459:ILE:HD12	1.79	0.64
1:A:4040:PRO:HB3	1:A:4124:LEU:HD23	1.81	0.63
1:A:2909:LEU:HA	2:A:4704:ADP:C2	2.34	0.63
1:A:1880:VAL:HG11	1:A:2049:ILE:HA	1.80	0.63
1:A:2536:ASP:OD1	1:A:2576:ARG:NH1	2.31	0.63
1:A:3772:ASN:HA	1:A:3775:ARG:HE	1.61	0.63
1:A:1645:LYS:HD3	1:A:1645:LYS:N	2.14	0.62
1:A:4069:ILE:HD13	1:A:4079:GLN:HG3	1.81	0.62
1:A:3130:TYR:CZ	1:A:3132:LYS:HB2	2.35	0.62
1:A:3780:VAL:O	1:A:3784:VAL:HG23	1.99	0.62
1:A:3638:VAL:HG12	1:A:3681:THR:HB	1.81	0.62
1:A:2182:LEU:HD11	1:A:2207:VAL:HG11	1.79	0.62
1:A:1961:ASN:HB3	1:A:2018:MET:HE1	1.80	0.62
1:A:3792:GLN:O	1:A:3796:THR:HG23	1.99	0.62
1:A:3097:TRP:HB3	1:A:3101:ALA:HB3	1.82	0.61
1:A:1571:ILE:HG23	1:A:1604:LEU:HD22	1.81	0.61
1:A:2823:ARG:NH1	1:A:2868:SER:H	1.96	0.61
1:A:2823:ARG:HH22	1:A:2868:SER:HB2	1.66	0.61
1:A:2619:GLY:HA2	1:A:2662:PHE:HB3	1.81	0.61
1:A:4609:VAL:HG22	1:A:4642:VAL:HB	1.84	0.60
1:A:3034:LYS:HA	1:A:3050:LEU:CD2	2.29	0.60
1:A:3113:MET:O	1:A:3140:ARG:NH2	2.34	0.60
1:A:2572:LEU:HA	1:A:2575:VAL:HG22	1.83	0.60
1:A:3510:SER:HB3	1:A:3553:LEU:HD11	1.84	0.60
1:A:2291:VAL:HG23	1:A:2292:ARG:HG2	1.83	0.60
1:A:3127:PRO:HD3	1:A:3538:GLN:HB3	1.84	0.59
1:A:2444:GLU:H	1:A:2510:MET:HE1	1.67	0.59
1:A:3121:ILE:HD12	1:A:3121:ILE:H	1.66	0.59
1:A:2590:PRO:HB2	1:A:2731:VAL:HG12	1.84	0.59
1:A:2564:ALA:HB3	1:A:2567:VAL:HG23	1.85	0.59
1:A:1508:LYS:NZ	1:A:1524:GLU:OE1	2.34	0.59
1:A:1661:VAL:HG22	1:A:1676:ILE:HG21	1.85	0.59
1:A:2324:LEU:HD21	1:A:2332:ARG:HE	1.68	0.59
1:A:2308:ASP:OD1	1:A:2311:TRP:NE1	2.35	0.58
1:A:4065:GLN:HG2	1:A:4092:ARG:HE	1.68	0.58
1:A:4547:THR:HG22	1:A:4586:PRO:HG2	1.84	0.58
1:A:2851:ASP:OD1	1:A:2867:MET:HG3	2.02	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3030:MET:CE	1:A:3050:LEU:HB3	2.33	0.58
1:A:4463:SER:HG	1:A:4464:TRP:CD1	2.21	0.58
1:A:1497:VAL:O	1:A:1501:ILE:HG22	2.04	0.58
1:A:2834:GLN:HG2	1:A:2843:ARG:HG2	1.86	0.58
1:A:3627:LEU:HD22	1:A:3662:ILE:HG21	1.85	0.58
1:A:1649:LYS:O	1:A:1652:LYS:NZ	2.37	0.58
1:A:2984:GLY:HA2	1:A:3057:GLN:HB2	1.86	0.58
1:A:1816:VAL:HG11	1:A:2052:VAL:HG22	1.85	0.57
1:A:2775:GLU:O	1:A:2779:MET:HG3	2.04	0.57
1:A:3034:LYS:HE3	1:A:3045:ASP:HA	1.84	0.57
1:A:3050:LEU:O	1:A:3053:TRP:HB3	2.05	0.57
1:A:2744:LEU:HA	1:A:2747:ILE:HG22	1.85	0.57
1:A:4031:VAL:HG11	1:A:4058:LEU:HD21	1.86	0.57
1:A:3151:HIS:ND1	1:A:3516:TYR:OH	2.15	0.57
1:A:2346:GLN:HB2	1:A:2726:ARG:HD2	1.87	0.57
1:A:1912:LYS:HD2	1:A:2017:THR:HG23	1.87	0.57
1:A:3486:ARG:O	1:A:3490:GLU:HG2	2.05	0.57
1:A:4031:VAL:O	1:A:4123:ARG:NH1	2.37	0.57
1:A:3082:SER:HB3	1:A:3085:LEU:HD13	1.85	0.56
1:A:2369:LEU:HD12	1:A:2373:MET:HE3	1.87	0.56
1:A:4038:ASN:HB3	1:A:4118:PRO:HG3	1.87	0.56
1:A:2406:GLU:HG2	1:A:2409:ALA:HB2	1.87	0.56
1:A:2568:VAL:HG11	1:A:2607:SER:HB2	1.88	0.56
1:A:3549:ARG:NH2	1:A:3575:GLU:OE2	2.27	0.56
1:A:4247:MET:HA	1:A:4251:ILE:HB	1.87	0.56
1:A:3973:LEU:HB3	1:A:3992:LEU:HD11	1.88	0.56
1:A:4096:LEU:HD13	1:A:4105:TRP:HH2	1.70	0.56
1:A:2461:MET:HG2	1:A:2583:THR:HG21	1.87	0.55
1:A:2396:ARG:NH1	1:A:2406:GLU:OE2	2.40	0.55
1:A:2936:ILE:HD13	1:A:3068:MET:HB2	1.88	0.55
1:A:3030:MET:HE1	1:A:3051:TYR:N	2.21	0.55
1:A:3756:VAL:HG23	1:A:3760:ILE:HG21	1.87	0.55
1:A:4534:TRP:CD1	1:A:4594:LYS:HZ1	2.25	0.55
1:A:2910:VAL:HG23	1:A:3109:PHE:HE1	1.71	0.55
1:A:4460:LEU:HA	1:A:4475:VAL:HG22	1.87	0.55
1:A:1880:VAL:HB	1:A:2049:ILE:HD13	1.87	0.55
1:A:2555:ILE:HD13	1:A:2570:PRO:HD2	1.87	0.55
1:A:3143:ILE:HD13	1:A:3541:ILE:HD13	1.89	0.55
1:A:4071:ILE:HG23	1:A:4077:PHE:HE2	1.72	0.55
1:A:2152:GLU:OE1	1:A:2152:GLU:N	2.27	0.55
1:A:4205:TYR:OH	1:A:4261:ASP:OD2	2.23	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1911:GLY:HA2	2:A:4701:ADP:H5'1	1.88	0.55
1:A:3030:MET:HA	1:A:3030:MET:HE3	1.89	0.55
1:A:2773:MET:HB3	1:A:2799:MET:HE1	1.89	0.55
1:A:2308:ASP:OD1	1:A:2308:ASP:N	2.38	0.54
1:A:2934:LEU:HD23	1:A:3091:LEU:HB3	1.88	0.54
1:A:1652:LYS:HB3	1:A:2332:ARG:HH22	1.73	0.54
1:A:3888:ALA:HB1	1:A:4012:ASN:HD22	1.73	0.54
1:A:2090:LEU:O	1:A:2094:LYS:HG3	2.07	0.54
1:A:2469:VAL:HG13	1:A:2481:MET:SD	2.48	0.54
1:A:2816:LEU:HD11	1:A:2820:GLY:HA3	1.89	0.54
1:A:3715:GLU:OE2	1:A:3837:HIS:NE2	2.39	0.54
1:A:1961:ASN:HD21	1:A:2019:ASN:HB3	1.73	0.53
1:A:3957:PHE:HZ	1:A:3996:PHE:HE2	1.56	0.53
1:A:1814:GLU:OE2	1:A:1818:GLN:NE2	2.41	0.53
1:A:2795:SER:HB2	1:A:2796:PRO:CD	2.38	0.53
1:A:4113:LEU:HA	1:A:4116:LEU:HD12	1.90	0.53
1:A:3788:ASP:N	1:A:3788:ASP:OD1	2.42	0.53
1:A:2888:GLU:OE2	1:A:2888:GLU:N	2.34	0.53
1:A:3724:VAL:HG21	1:A:3797:VAL:HG21	1.91	0.53
1:A:3873:ARG:HD2	1:A:4025:LEU:HD13	1.90	0.53
1:A:3100:GLU:HA	1:A:3130:TYR:HE1	1.74	0.53
1:A:4398:LEU:HG	1:A:4417:VAL:HG21	1.90	0.53
1:A:1927:VAL:HG22	1:A:1954:TRP:HB2	1.91	0.53
1:A:2871:ILE:HD11	1:A:2873:TYR:HE1	1.73	0.53
1:A:3012:LEU:HD11	1:A:3066:PHE:CZ	2.43	0.53
1:A:2443:LEU:HG	1:A:2510:MET:HE3	1.91	0.52
1:A:1842:MET:HA	1:A:1861:MET:HB2	1.92	0.52
1:A:2600:GLY:HA2	2:A:4703:ADP:O1A	2.10	0.52
1:A:2065:LEU:HD11	1:A:2133:GLU:HB3	1.90	0.52
1:A:3562:TRP:HB3	1:A:3567:LEU:HD23	1.91	0.52
1:A:3772:ASN:HA	1:A:3775:ARG:NE	2.24	0.52
1:A:1880:VAL:HG13	1:A:2052:VAL:HB	1.90	0.52
1:A:2910:VAL:HG22	1:A:3108:GLU:HG2	1.90	0.52
1:A:4037:PRO:HB2	1:A:4118:PRO:HB2	1.90	0.52
1:A:4002:LEU:HD23	1:A:4339:MET:HE3	1.90	0.52
1:A:3113:MET:SD	1:A:3184:ALA:HA	2.50	0.52
1:A:2341:ILE:HG22	1:A:2343:PHE:CE1	2.44	0.52
1:A:2571:THR:O	1:A:2575:VAL:HG13	2.09	0.52
1:A:3021:PHE:HE2	1:A:3054:PHE:CE2	2.28	0.52
1:A:4202:SER:OG	1:A:4261:ASP:OD2	2.23	0.52
1:A:2107:ARG:NH2	1:A:2135:GLU:OE1	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2797:ARG:O	1:A:2801:ARG:HG3	2.10	0.52
1:A:1864:ALA:HB2	1:A:1897:GLU:HB2	1.92	0.51
1:A:4387:TRP:HE1	1:A:4476:ILE:HD12	1.75	0.51
1:A:2648:VAL:CG1	1:A:2701:VAL:HG22	2.40	0.51
1:A:1466:ILE:HG12	1:A:1500:HIS:ND1	2.25	0.51
1:A:2191:LEU:HD12	3:A:4702:ATP:C5	2.45	0.51
1:A:3684:PRO:HB3	1:A:3702:THR:HG21	1.92	0.51
1:A:1910:THR:HG21	1:A:2041:MET:O	2.10	0.51
1:A:3763:ASP:OD2	1:A:3765:THR:OG1	2.26	0.51
1:A:2561:LYS:O	1:A:2567:VAL:HG21	2.10	0.51
1:A:3909:LEU:HB3	1:A:4344:LEU:HD13	1.92	0.51
1:A:1721:VAL:HA	1:A:1724:VAL:HG12	1.92	0.51
1:A:2996:GLU:HB3	1:A:3068:MET:SD	2.50	0.51
1:A:1626:PHE:HB2	1:A:1699:ASN:ND2	2.25	0.51
1:A:2189:MET:CE	1:A:2236:VAL:HG22	2.41	0.51
1:A:3562:TRP:HZ2	1:A:3581:LYS:HD3	1.75	0.51
1:A:3034:LYS:HB2	1:A:3050:LEU:HD13	1.92	0.51
1:A:2437:LEU:HD21	1:A:2451:ARG:HG3	1.93	0.50
1:A:2605:LEU:HD13	1:A:2662:PHE:CE2	2.45	0.50
1:A:2629:GLU:O	1:A:2633:LYS:HG2	2.10	0.50
1:A:2572:LEU:O	1:A:2575:VAL:HG22	2.12	0.50
1:A:2992:PHE:HB3	1:A:3064:VAL:HA	1.93	0.50
1:A:3053:TRP:O	1:A:3057:GLN:HG2	2.11	0.50
1:A:3576:ASN:ND2	1:A:3700:ASN:O	2.32	0.50
1:A:1912:LYS:HG2	1:A:2041:MET:HG3	1.93	0.50
1:A:2568:VAL:HG11	1:A:2607:SER:CB	2.42	0.50
1:A:1843:ARG:NH1	1:A:1845:TYR:OH	2.42	0.50
1:A:3590:ILE:HD11	1:A:3700:ASN:ND2	2.27	0.50
1:A:1872:TYR:HE2	1:A:1874:GLY:HA2	1.76	0.50
1:A:2181:GLU:HA	1:A:2184:LYS:HD3	1.94	0.50
1:A:2562:VAL:HG21	1:A:2755:MET:HB2	1.94	0.50
1:A:1486:LEU:HB3	1:A:1541:GLN:NE2	2.26	0.50
1:A:3779:GLU:O	1:A:3783:LYS:HG3	2.11	0.50
1:A:1857:LEU:HD22	1:A:1868:TYR:HB2	1.92	0.50
1:A:2969:GLY:HA2	1:A:3004:PHE:HE1	1.76	0.50
1:A:4180:TYR:OH	1:A:4220:ASP:OD2	2.28	0.50
1:A:4391:ILE:O	1:A:4428:ARG:NH2	2.45	0.50
1:A:3100:GLU:HA	1:A:3130:TYR:CE1	2.47	0.50
1:A:1504:VAL:HG11	1:A:1524:GLU:HB2	1.93	0.49
1:A:2877:LEU:HD12	1:A:2877:LEU:H	1.76	0.49
1:A:3190:LYS:HB3	1:A:3503:ILE:HD11	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1645:LYS:HD3	1:A:1645:LYS:H	1.77	0.49
1:A:2422:ILE:HD12	1:A:2487:GLU:HB2	1.93	0.49
1:A:3037:ALA:HA	1:A:3053:TRP:NE1	2.27	0.49
1:A:2222:MET:HG2	1:A:2364:PHE:HE1	1.77	0.49
1:A:2769:LEU:HA	1:A:2858:PHE:HZ	1.77	0.49
1:A:2968:THR:OG1	1:A:2971:ASP:OD1	2.26	0.49
1:A:2995:ASP:HA	1:A:3067:THR:OG1	2.12	0.49
1:A:4087:ALA:O	1:A:4091:GLY:N	2.45	0.49
1:A:4381:HIS:HB2	1:A:4438:CYS:HB3	1.94	0.49
1:A:1487:ILE:H	1:A:1541:GLN:HE22	1.59	0.49
1:A:1556:ASP:O	1:A:1560:LEU:HG	2.12	0.49
1:A:1979:GLN:HB3	1:A:2035:LEU:HD13	1.94	0.49
1:A:2942:GLY:O	1:A:2943:LYS:C	2.56	0.49
1:A:4324:PRO:HD3	1:A:4638:ARG:HG2	1.94	0.49
1:A:1964:GLU:HG2	1:A:1965:GLU:N	2.28	0.49
1:A:1556:ASP:OD1	1:A:1645:LYS:HE2	2.12	0.49
1:A:2942:GLY:HA2	2:A:4704:ADP:H5'1	1.94	0.49
1:A:3021:PHE:CD2	1:A:3029:LEU:HD22	2.47	0.49
1:A:3193:GLU:O	1:A:3196:GLU:HG3	2.13	0.49
1:A:3892:LEU:HD13	1:A:3983:ILE:HG12	1.95	0.49
1:A:2257:LYS:NZ	1:A:2308:ASP:OD2	2.45	0.49
1:A:2748:TYR:CE2	1:A:2799:MET:CB	2.96	0.49
1:A:3567:LEU:HD12	1:A:3568:PRO:HD2	1.95	0.49
1:A:3047:HIS:HA	1:A:3050:LEU:HB2	1.94	0.48
1:A:3553:LEU:HB3	1:A:3578:ILE:HD12	1.95	0.48
1:A:3889:ARG:HH22	1:A:4347:GLN:HG3	1.77	0.48
1:A:2506:SER:OG	1:A:2507:ARG:N	2.46	0.48
1:A:3762:ASP:OD1	1:A:3762:ASP:N	2.44	0.48
1:A:4088:VAL:HG23	1:A:4118:PRO:HA	1.95	0.48
1:A:4511:LEU:HD23	1:A:4560:VAL:HG13	1.96	0.48
1:A:3049:GLU:O	1:A:3052:LYS:HE3	2.14	0.48
1:A:1561:LEU:HB3	1:A:1564:GLU:HB2	1.95	0.48
1:A:1598:GLN:HG2	1:A:1599:ARG:HH21	1.79	0.48
1:A:3765:THR:HB	1:A:3767:ILE:HG12	1.95	0.48
1:A:1488:ARG:NH1	1:A:1488:ARG:HB2	2.28	0.48
1:A:2221:MET:HG2	1:A:2343:PHE:HB2	1.93	0.48
1:A:2452:LEU:HD23	1:A:2452:LEU:HA	1.69	0.48
1:A:3611:ARG:NH1	1:A:3636:GLN:OE1	2.47	0.48
1:A:2500:TRP:CD2	1:A:2580:LEU:HD11	2.49	0.48
1:A:2836:ARG:HB2	1:A:3091:LEU:HD11	1.94	0.48
1:A:1638:LEU:HD23	1:A:1641:ILE:HD11	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2382:LEU:HD23	1:A:2420:ALA:HB2	1.96	0.48
1:A:3208:ILE:HG13	1:A:3489:TRP:HZ3	1.78	0.48
1:A:3692:LEU:O	1:A:3696:VAL:HG22	2.14	0.48
1:A:1526:LYS:O	1:A:1530:ILE:HG22	2.14	0.48
1:A:1571:ILE:HD11	1:A:1607:LEU:HB3	1.96	0.48
1:A:4054:HIS:CD2	1:A:4147:PHE:HE2	2.32	0.48
1:A:2622:PHE:CD2	1:A:2626:THR:HG21	2.48	0.48
1:A:2838:VAL:HG13	1:A:3093:TRP:CZ2	2.49	0.48
1:A:2912:PHE:CD1	1:A:2914:GLU:HB2	2.48	0.48
1:A:3772:ASN:O	1:A:3775:ARG:HG2	2.14	0.48
1:A:4021:MET:HA	1:A:4021:MET:HE2	1.95	0.48
1:A:2189:MET:HE1	1:A:2236:VAL:HG22	1.96	0.47
1:A:4423:LEU:HD13	1:A:4466:HIS:CD2	2.49	0.47
1:A:3596:ALA:O	1:A:3600:ILE:HG12	2.14	0.47
1:A:1746:GLN:O	1:A:1750:VAL:HG23	2.14	0.47
1:A:2066:ALA:HA	1:A:2069:ILE:HG22	1.96	0.47
1:A:3154:LEU:HD21	1:A:3171:ILE:HG13	1.96	0.47
1:A:3725:ASP:OD1	1:A:3728:ARG:NH2	2.37	0.47
1:A:2555:ILE:CD1	1:A:2570:PRO:HD2	2.44	0.47
1:A:3208:ILE:HG23	1:A:3482:LEU:HD12	1.95	0.47
1:A:2863:ARG:O	1:A:2867:MET:HG2	2.15	0.47
1:A:3561:ARG:NH2	1:A:3603:GLU:OE1	2.48	0.47
1:A:4535:SER:OG	1:A:4537:GLU:OE1	2.28	0.47
1:A:1658:PHE:HB2	1:A:1661:VAL:HB	1.96	0.47
1:A:2306:ASP:OD1	1:A:2307:VAL:N	2.48	0.47
1:A:3554:SER:HB3	1:A:3578:ILE:HD11	1.96	0.47
1:A:4423:LEU:HD13	1:A:4466:HIS:HD2	1.80	0.47
1:A:2191:LEU:HD11	1:A:2232:MET:HE3	1.97	0.47
1:A:2660:VAL:HG22	1:A:2707:GLN:HB2	1.97	0.47
1:A:3073:GLU:HG2	1:A:3074:GLY:N	2.29	0.47
1:A:3873:ARG:CD	1:A:4025:LEU:HD13	2.45	0.47
1:A:3913:GLU:N	1:A:3913:GLU:OE1	2.48	0.47
1:A:4281:GLU:N	1:A:4281:GLU:OE1	2.48	0.47
1:A:1717:LEU:HB2	1:A:1749:LEU:HD22	1.96	0.47
1:A:2349:LYS:HA	1:A:2349:LYS:HD3	1.72	0.47
1:A:2666:ILE:HB	1:A:2712:CYS:SG	2.54	0.47
1:A:2869:ARG:N	1:A:2870:PRO:HD2	2.30	0.47
1:A:2889:LEU:HD23	1:A:2916:LEU:HG	1.97	0.47
1:A:2605:LEU:HD11	1:A:2709:VAL:HG12	1.97	0.47
1:A:3828:SER:HB3	1:A:4140:ARG:HG2	1.96	0.47
1:A:2747:ILE:HD13	1:A:2747:ILE:O	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2999:VAL:HG13	1:A:3005:LEU:HD21	1.96	0.47
1:A:3957:PHE:HZ	1:A:3996:PHE:CE2	2.33	0.47
1:A:1882:THR:OG1	1:A:1883:PRO:HD2	2.14	0.46
1:A:2956:LEU:HD23	1:A:2989:LYS:HB3	1.97	0.46
1:A:3482:LEU:O	1:A:3485:GLU:HG3	2.15	0.46
1:A:3927:LEU:HD21	1:A:3935:VAL:HG21	1.97	0.46
1:A:2784:PHE:CE1	1:A:2842:GLU:HB3	2.50	0.46
1:A:3033:CYS:SG	1:A:3053:TRP:HE3	2.38	0.46
1:A:3140:ARG:O	1:A:3144:VAL:HG23	2.15	0.46
1:A:2231:SER:HA	1:A:2234:TRP:CD1	2.51	0.46
1:A:2395:GLN:HB3	1:A:2398:ARG:HH22	1.80	0.46
1:A:2666:ILE:O	1:A:2669:PRO:HD2	2.15	0.46
1:A:3483:SER:O	1:A:3487:GLU:HG2	2.15	0.46
1:A:2012:MET:HE3	1:A:2012:MET:HB3	1.79	0.46
1:A:2964:HIS:HB2	1:A:3644:VAL:HB	1.98	0.46
1:A:3910:ARG:CZ	1:A:4344:LEU:HD11	2.46	0.46
1:A:1509:LEU:HD22	1:A:3628:ARG:HE	1.80	0.46
1:A:2453:ARG:NH1	1:A:2505:ASP:OD2	2.27	0.46
1:A:2757:ARG:HG2	1:A:2763:ARG:HH22	1.79	0.46
1:A:3175:HIS:CD2	1:A:3585:ARG:HH12	2.33	0.46
1:A:2784:PHE:HB2	1:A:2794:TYR:HE2	1.80	0.46
1:A:2869:ARG:CZ	1:A:2869:ARG:HA	2.46	0.46
1:A:2412:MET:HE1	1:A:2467:ARG:HA	1.97	0.46
1:A:3588:LEU:HD22	1:A:3698:PHE:CE1	2.51	0.46
1:A:3172:THR:HG21	1:A:3694:SER:HB2	1.98	0.46
1:A:3755:GLU:OE2	1:A:3759:ARG:NH1	2.42	0.46
1:A:2728:LEU:HA	1:A:2731:VAL:HG22	1.98	0.46
1:A:3037:ALA:HA	1:A:3053:TRP:CE2	2.51	0.46
1:A:3042:LEU:O	1:A:3043:MET:C	2.58	0.46
1:A:2191:LEU:HD12	3:A:4702:ATP:C6	2.51	0.46
1:A:2444:GLU:N	1:A:2510:MET:HE1	2.30	0.46
1:A:2620:LEU:HD12	1:A:2630:LEU:HD21	1.97	0.46
1:A:2897:LEU:HD22	1:A:2911:LEU:HD21	1.97	0.46
1:A:1925:ARG:HG2	1:A:1954:TRP:CD1	2.51	0.45
1:A:2872:LEU:HG	1:A:2920:LEU:HD12	1.96	0.45
1:A:2972:PHE:CE2	1:A:3004:PHE:HB3	2.51	0.45
1:A:2986:LYS:O	1:A:2987:ASN:C	2.59	0.45
1:A:3079:ALA:HB2	1:A:3086:PHE:CE1	2.51	0.45
1:A:4501:ALA:HB3	1:A:4502:LYS:NZ	2.31	0.45
1:A:1575:PHE:CZ	1:A:1579:MET:HE2	2.52	0.45
1:A:3114:ASP:O	1:A:3116:GLU:HG3	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3151:HIS:HD1	1:A:3516:TYR:HH	0.57	0.45
1:A:3612:THR:HG21	1:A:3619:PHE:HA	1.98	0.45
1:A:2093:LEU:O	1:A:2097:LEU:HG	2.17	0.45
1:A:3591:ASP:N	1:A:3591:ASP:OD1	2.47	0.45
1:A:3921:THR:O	1:A:3921:THR:OG1	2.33	0.45
1:A:2053:MET:HE1	1:A:2094:LYS:HG2	1.99	0.45
1:A:2075:LEU:HB3	1:A:2160:LEU:HD13	1.97	0.45
1:A:2598:GLY:O	2:A:4703:ADP:H5'2	2.16	0.45
1:A:3817:SER:HB2	1:A:4346:MET:HE1	1.99	0.45
1:A:1797:LEU:HD23	1:A:1797:LEU:HA	1.87	0.45
1:A:2683:ILE:O	1:A:2687:VAL:HG22	2.17	0.45
1:A:2354:ALA:HB1	1:A:2358:ARG:HH21	1.81	0.45
1:A:2527:PRO:HD3	1:A:2545:TRP:CE2	2.52	0.45
1:A:2596:PRO:HB2	1:A:2738:TYR:CZ	2.51	0.45
1:A:2720:ARG:HH22	1:A:3083:PRO:HB3	1.82	0.45
1:A:3910:ARG:NH1	1:A:4344:LEU:HD11	2.31	0.45
1:A:1523:TRP:O	1:A:1527:LEU:HG	2.17	0.45
1:A:1632:VAL:HG22	1:A:1636:ASP:HB2	1.98	0.45
1:A:1882:THR:CG2	1:A:1885:THR:HG23	2.47	0.45
1:A:1892:MET:SD	1:A:1902:GLY:HA3	2.57	0.45
1:A:1961:ASN:ND2	1:A:2019:ASN:O	2.50	0.45
1:A:2472:TYR:CD1	1:A:2541:ILE:HG21	2.51	0.45
1:A:3021:PHE:CE2	1:A:3054:PHE:CE2	3.04	0.45
1:A:3042:LEU:HD12	1:A:3053:TRP:NE1	2.31	0.45
1:A:3945:LYS:HB2	1:A:3945:LYS:HE2	1.71	0.45
1:A:4084:ILE:HD11	1:A:4096:LEU:HD11	1.98	0.45
1:A:4158:LEU:HD23	1:A:4158:LEU:HA	1.80	0.45
1:A:4430:ASP:OD2	1:A:4447:TYR:OH	2.29	0.45
1:A:1626:PHE:HB3	1:A:1629:PHE:CD2	2.52	0.45
1:A:1678:SER:OG	1:A:1679:ARG:N	2.48	0.45
1:A:2603:MET:HE2	2:A:4703:ADP:C4	2.52	0.45
1:A:2748:TYR:HA	1:A:2751:PHE:HB2	1.99	0.44
1:A:3872:ALA:O	1:A:3880:HIS:NE2	2.50	0.44
1:A:1652:LYS:O	1:A:1655:LYS:NZ	2.51	0.44
1:A:2823:ARG:HH12	1:A:2868:SER:CB	2.30	0.44
1:A:3520:PHE:HB3	1:A:3524:MET:HB3	1.98	0.44
1:A:3592:PRO:HD3	1:A:3702:THR:HG22	1.98	0.44
1:A:1550:ILE:HD13	1:A:1615:LEU:HD21	1.99	0.44
1:A:2393:GLU:O	1:A:2397:ARG:NH1	2.50	0.44
1:A:2912:PHE:CE1	1:A:2915:VAL:HG23	2.53	0.44
1:A:3033:CYS:SG	1:A:3050:LEU:O	2.75	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2369:LEU:HD23	1:A:2451:ARG:HH21	1.82	0.44
1:A:2419:ALA:O	1:A:2423:MET:HG2	2.18	0.44
1:A:3114:ASP:O	1:A:3140:ARG:NH2	2.50	0.44
1:A:3620:ARG:O	1:A:3624:GLU:HG2	2.17	0.44
1:A:4031:VAL:HG21	1:A:4125:PHE:HZ	1.83	0.44
1:A:2222:MET:HG2	1:A:2364:PHE:CE1	2.52	0.44
1:A:3051:TYR:HE1	1:A:3054:PHE:HD2	1.66	0.44
1:A:3624:GLU:HA	1:A:3627:LEU:HD12	2.00	0.44
1:A:4460:LEU:HD12	1:A:4461:PRO:HD2	1.99	0.44
1:A:2045:ASP:O	1:A:2049:ILE:HG12	2.17	0.44
1:A:2290:SER:HB3	1:A:2295:LEU:HG	2.00	0.44
1:A:3551:GLU:OE1	1:A:3732:LEU:HG	2.17	0.44
1:A:2577:HIS:ND1	1:A:2736:VAL:HG22	2.32	0.44
1:A:3481:SER:HB2	1:A:3770:LEU:HD11	1.99	0.44
1:A:3966:PRO:HD2	1:A:4000:ARG:HG3	2.00	0.44
1:A:2031:ASN:OD1	1:A:2031:ASN:N	2.50	0.43
1:A:2123:ASP:O	1:A:2127:ILE:HG13	2.18	0.43
1:A:2172:ARG:C	1:A:2172:ARG:HD3	2.44	0.43
1:A:2382:LEU:O	1:A:2416:GLN:NE2	2.46	0.43
1:A:2568:VAL:CG1	1:A:2607:SER:HB2	2.48	0.43
1:A:4176:ARG:NH2	1:A:4224:ASP:OD1	2.48	0.43
1:A:4193:ARG:NH2	1:A:4637:GLU:O	2.31	0.43
1:A:1505:SER:HA	1:A:1508:LYS:HZ3	1.83	0.43
1:A:1622:GLU:OE2	1:A:1697:LYS:NZ	2.39	0.43
1:A:2445:HIS:CD2	1:A:2449:LEU:HD22	2.54	0.43
1:A:2558:GLU:HG3	1:A:2560:HIS:CE1	2.53	0.43
1:A:1879:LEU:HB3	2:A:4701:ADP:N6	2.33	0.43
1:A:2146:VAL:HA	1:A:2149:LEU:HD12	2.00	0.43
1:A:2413:LEU:HD23	1:A:2413:LEU:HA	1.81	0.43
1:A:3058:VAL:O	1:A:3059:ILE:C	2.61	0.43
1:A:3097:TRP:HB3	1:A:3101:ALA:CB	2.45	0.43
1:A:3180:ILE:HD12	1:A:3180:ILE:HA	1.94	0.43
1:A:4404:ASN:ND2	1:A:4501:ALA:HB2	2.33	0.43
1:A:1928:LEU:HD13	1:A:1948:LEU:HD21	2.01	0.43
1:A:2635:PHE:HB3	1:A:2650:LEU:HD11	2.00	0.43
1:A:2871:ILE:CD1	1:A:2873:TYR:HE1	2.31	0.43
1:A:4260:PHE:CE2	1:A:4608:PRO:HB3	2.53	0.43
1:A:2648:VAL:HG12	1:A:2701:VAL:HG22	1.99	0.43
1:A:3590:ILE:HD11	1:A:3700:ASN:HD22	1.82	0.43
1:A:2632:LEU:HD23	1:A:2632:LEU:HA	1.86	0.43
1:A:3030:MET:HE1	1:A:3050:LEU:C	2.43	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3513:PHE:HZ	1:A:3575:GLU:HB3	1.84	0.43
1:A:1663:SER:OG	1:A:1664:ILE:N	2.51	0.43
1:A:2152:GLU:H	1:A:2152:GLU:CD	2.21	0.43
1:A:2415:ILE:HD12	1:A:2415:ILE:HA	1.89	0.43
1:A:2910:VAL:HG23	1:A:3109:PHE:CE1	2.53	0.43
1:A:4107:MET:HE1	1:A:4135:PRO:HB3	2.01	0.43
1:A:2759:ILE:HD11	1:A:2810:LEU:HD22	2.01	0.43
1:A:2823:ARG:HH12	1:A:2868:SER:N	2.08	0.43
1:A:3736:GLY:O	1:A:3740:LEU:N	2.43	0.43
1:A:3846:LEU:HD21	1:A:3859:ILE:HG13	2.01	0.43
1:A:4524:THR:HB	1:A:4558:PHE:CE2	2.54	0.43
1:A:2962:LYS:HG3	1:A:3665:GLY:O	2.19	0.43
1:A:4243:LEU:O	1:A:4247:MET:HE3	2.18	0.43
1:A:1478:VAL:HB	1:A:1488:ARG:NH2	2.29	0.43
1:A:3865:GLN:NE2	1:A:3869:ASN:OD1	2.51	0.43
1:A:4457:LYS:HB2	1:A:4457:LYS:HE2	1.88	0.43
1:A:1912:LYS:HZ3	1:A:1912:LYS:HB2	1.84	0.42
1:A:2418:ASP:O	1:A:2422:ILE:HG12	2.19	0.42
1:A:2465:ALA:HB2	1:A:2493:TYR:CD1	2.54	0.42
1:A:2571:THR:HG23	1:A:2574:THR:H	1.84	0.42
1:A:2577:HIS:O	1:A:2581:LEU:HG	2.19	0.42
1:A:3127:PRO:HG3	1:A:3538:GLN:HB3	2.01	0.42
1:A:2214:THR:HG22	1:A:2220:LEU:HD21	2.01	0.42
1:A:2784:PHE:HB3	1:A:2792:TYR:CD2	2.54	0.42
1:A:3607:ARG:HD2	1:A:3632:PRO:HD3	2.01	0.42
1:A:3824:LEU:HD22	1:A:4130:ILE:HD12	2.01	0.42
1:A:3947:LEU:O	1:A:3951:VAL:HG23	2.19	0.42
1:A:4183:LEU:HD11	1:A:4215:ALA:HB1	2.01	0.42
1:A:1698:ILE:O	1:A:1702:LEU:HB2	2.18	0.42
1:A:2182:LEU:HD13	1:A:2236:VAL:HG12	2.01	0.42
1:A:3048:GLU:CD	1:A:3049:GLU:HG2	2.44	0.42
1:A:4002:LEU:HD23	1:A:4002:LEU:HA	1.87	0.42
1:A:2181:GLU:HG3	1:A:2244:LEU:HD13	2.01	0.42
1:A:2213:ILE:HG22	1:A:2220:LEU:HD22	2.01	0.42
1:A:2222:MET:CE	1:A:2342:MET:HG2	2.50	0.42
1:A:2598:GLY:HA2	1:A:2797:ARG:HD2	2.01	0.42
1:A:3079:ALA:HB2	1:A:3086:PHE:HE1	1.84	0.42
1:A:3127:PRO:CD	1:A:3538:GLN:HB3	2.49	0.42
1:A:1469:VAL:HG11	1:A:1500:HIS:HE1	1.83	0.42
1:A:2072:PHE:CZ	1:A:2161:LEU:HD13	2.54	0.42
1:A:2453:ARG:HD3	1:A:2728:LEU:O	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2315:LEU:HD13	1:A:2343:PHE:HZ	1.85	0.42
1:A:3021:PHE:HE2	1:A:3054:PHE:HE2	1.66	0.42
1:A:2241:LEU:HB3	1:A:2298:ARG:NH2	2.35	0.42
1:A:2580:LEU:HB3	1:A:2584:TRP:CZ3	2.54	0.42
1:A:2920:LEU:HD23	1:A:2920:LEU:HA	1.81	0.42
1:A:2976:LEU:HA	1:A:2979:VAL:HG12	2.01	0.42
1:A:4179:LEU:HD12	1:A:4223:LEU:HD22	2.02	0.42
1:A:4233:ILE:HD11	1:A:4238:ILE:HG12	2.01	0.42
1:A:4324:PRO:HB3	1:A:4638:ARG:HH11	1.84	0.42
1:A:1638:LEU:HD23	1:A:1638:LEU:HA	1.86	0.42
1:A:1800:GLN:OE1	1:A:1804:ARG:NH1	2.53	0.42
1:A:2072:PHE:CE1	1:A:2161:LEU:HD13	2.55	0.42
1:A:2427:PHE:HE2	1:A:2459:PHE:HE1	1.68	0.42
1:A:2813:LEU:HD22	1:A:2816:LEU:HD22	2.02	0.42
1:A:3691:ASP:CG	1:A:3695:ARG:HE	2.28	0.42
1:A:3847:LYS:HB2	1:A:3847:LYS:HE2	1.82	0.42
1:A:4414:GLU:OE1	1:A:4415:ARG:N	2.53	0.42
1:A:1702:LEU:HD12	1:A:1702:LEU:HA	1.79	0.42
1:A:1704:LEU:HD23	1:A:1704:LEU:HA	1.88	0.42
1:A:2189:MET:HE3	1:A:2189:MET:HB2	1.85	0.42
1:A:2798:GLU:HA	1:A:2801:ARG:HD2	2.02	0.42
1:A:2976:LEU:HA	1:A:2976:LEU:HD23	1.86	0.42
1:A:2254:ILE:HD11	1:A:2283:VAL:HG21	2.01	0.42
1:A:2648:VAL:HG11	1:A:2701:VAL:HG22	2.01	0.42
1:A:3190:LYS:CB	1:A:3503:ILE:HD11	2.49	0.42
1:A:3518:GLY:HA2	1:A:3579:MET:HE1	2.01	0.42
1:A:1738:TYR:HE2	1:A:1792:LEU:HD21	1.85	0.41
1:A:2897:LEU:HD12	1:A:2897:LEU:HA	1.81	0.41
1:A:3211:THR:O	1:A:3215:VAL:HG23	2.20	0.41
1:A:3709:GLN:HG3	1:A:3805:SER:OG	2.20	0.41
1:A:3717:LEU:HD23	1:A:3717:LEU:HA	1.79	0.41
1:A:3908:PHE:HE2	1:A:4343:MET:HE1	1.84	0.41
1:A:2912:PHE:CE1	1:A:2914:GLU:HB2	2.55	0.41
1:A:3867:ALA:O	1:A:3871:VAL:HG23	2.20	0.41
1:A:1778:LEU:HB3	1:A:1826:ILE:HG12	2.01	0.41
1:A:2053:MET:HE1	1:A:2094:LYS:HA	2.02	0.41
1:A:2161:LEU:HD12	1:A:2161:LEU:HA	1.91	0.41
1:A:2827:HIS:HB2	1:A:2871:ILE:HD11	2.01	0.41
1:A:1872:TYR:HD2	1:A:1874:GLY:H	1.69	0.41
1:A:2183:LYS:HZ3	1:A:2193:TYR:HE2	1.67	0.41
1:A:2600:GLY:HA2	2:A:4703:ADP:H5'1	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2819:GLU:HB2	1:A:2865:LYS:HE3	2.02	0.41
1:A:3078:ARG:HD3	1:A:3078:ARG:HA	1.85	0.41
1:A:3776:GLU:O	1:A:3780:VAL:HG13	2.21	0.41
1:A:4069:ILE:HD12	1:A:4080:ALA:HA	2.03	0.41
1:A:2150:VAL:HG12	1:A:2363:TRP:CE2	2.55	0.41
1:A:2309:PRO:HB3	1:A:2352:THR:HG23	2.01	0.41
1:A:2568:VAL:HG11	1:A:2607:SER:OG	2.20	0.41
1:A:2980:LEU:HB3	1:A:3054:PHE:HZ	1.85	0.41
1:A:3637:ASP:N	1:A:3637:ASP:OD1	2.53	0.41
1:A:2307:VAL:HG23	1:A:2345:VAL:HG11	2.03	0.41
1:A:2492:ARG:HG3	1:A:2545:TRP:CE2	2.55	0.41
1:A:1574:GLU:OE2	1:A:1604:LEU:HD11	2.21	0.41
1:A:1579:MET:HA	1:A:1582:VAL:HG12	2.02	0.41
1:A:1741:TRP:CH2	1:A:1750:VAL:HG13	2.55	0.41
1:A:2872:LEU:CG	1:A:2920:LEU:HD12	2.50	0.41
1:A:3010:THR:HG21	1:A:3018:PRO:HD2	2.03	0.41
1:A:3029:LEU:HD21	1:A:3051:TYR:CE1	2.56	0.41
1:A:4096:LEU:HD13	1:A:4105:TRP:CH2	2.52	0.41
1:A:1880:VAL:HG21	1:A:2049:ILE:HA	2.02	0.41
1:A:2164:VAL:O	1:A:2166:PRO:HD3	2.20	0.41
1:A:2218:HIS:HA	1:A:2340:ARG:HD3	2.02	0.41
1:A:2275:TRP:CZ2	1:A:2327:LEU:HD23	2.56	0.41
1:A:2574:THR:O	1:A:2578:GLU:HB2	2.21	0.41
1:A:4107:MET:SD	1:A:4137:ASN:ND2	2.91	0.41
1:A:1486:LEU:HB3	1:A:1541:GLN:HE22	1.86	0.41
1:A:1698:ILE:HD13	1:A:1701:TRP:NE1	2.32	0.41
1:A:2801:ARG:O	1:A:2802:TRP:C	2.64	0.41
1:A:2818:VAL:O	1:A:2822:ILE:HG12	2.21	0.41
1:A:2871:ILE:HD11	1:A:2873:TYR:CE1	2.53	0.41
1:A:2885:ASP:HB3	1:A:2888:GLU:OE2	2.20	0.41
1:A:3030:MET:CE	1:A:3050:LEU:CB	2.99	0.41
1:A:3107:LYS:HE3	1:A:3107:LYS:HB3	1.93	0.41
1:A:3597:THR:O	1:A:3601:MET:HG2	2.21	0.41
1:A:4065:GLN:CG	1:A:4092:ARG:HE	2.34	0.41
1:A:1628:ARG:HE	1:A:1706:GLU:CD	2.29	0.41
1:A:1636:ASP:HB3	1:A:1653:HIS:CE1	2.56	0.41
1:A:1880:VAL:HG21	1:A:2049:ILE:O	2.21	0.41
1:A:3496:PHE:HZ	1:A:3743:ARG:NH1	2.19	0.41
1:A:3833:LEU:HD23	1:A:3833:LEU:HA	1.87	0.41
1:A:4247:MET:O	1:A:4252:TYR:HB2	2.21	0.41
1:A:4575:LEU:HG	1:A:4624:PHE:HB3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1912:LYS:HA	1:A:2041:MET:HE3	2.02	0.40
1:A:3727:LYS:HE3	1:A:3790:VAL:HG13	2.03	0.40
1:A:3871:VAL:HG12	1:A:3875:MET:SD	2.60	0.40
1:A:1911:GLY:HA3	2:A:4701:ADP:H8	1.86	0.40
1:A:2686:MET:HE2	1:A:2686:MET:HB3	1.86	0.40
1:A:2802:TRP:CZ2	1:A:2829:ALA:HB2	2.57	0.40
1:A:2867:MET:HE3	1:A:2867:MET:HB3	1.70	0.40
1:A:2901:TYR:OH	1:A:2909:LEU:N	2.52	0.40
1:A:2910:VAL:HG21	1:A:3105:VAL:HA	2.03	0.40
1:A:4312:LEU:HD23	1:A:4312:LEU:HA	1.86	0.40
1:A:1469:VAL:HG11	1:A:1500:HIS:CE1	2.57	0.40
1:A:1724:VAL:HA	1:A:1727:PHE:HB2	2.04	0.40
1:A:2385:ILE:HD13	1:A:2385:ILE:HA	1.97	0.40
1:A:3030:MET:HE2	1:A:3050:LEU:CB	2.51	0.40
1:A:3654:ARG:NH1	1:A:3668:ASP:OD2	2.54	0.40
1:A:4031:VAL:HG22	1:A:4123:ARG:HH11	1.86	0.40
1:A:2300:TRP:CD2	1:A:2342:MET:HE1	2.57	0.40
1:A:3169:MET:HG3	1:A:3698:PHE:CE2	2.56	0.40
1:A:3840:LEU:HD23	1:A:3840:LEU:HA	1.90	0.40
1:A:1668:GLU:H	1:A:1668:GLU:HG2	1.67	0.40
1:A:3992:LEU:HD23	1:A:3992:LEU:HA	1.91	0.40
1:A:4422:LYS:HD3	1:A:4422:LYS:C	2.46	0.40
1:A:4577:LEU:HD22	1:A:4638:ARG:HD2	2.04	0.40
1:A:4611:LEU:HB2	1:A:4619:ILE:HD11	2.03	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	A	2901/4646 (62%)	2832 (98%)	66 (2%)	3 (0%)	48 79

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	2987	ASN
1	A	2943	LYS
1	A	1510	SER

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	2583/4125 (63%)	2572 (100%)	11 (0%)	84 81

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1563	VAL
1	A	1967	MET
1	A	2182	LEU
1	A	2189	MET
1	A	2191	LEU
1	A	2747	ILE
1	A	2867	MET
1	A	3096	ASP
1	A	3125	TYR
1	A	3126	MET
1	A	4343	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1465	GLN
1	A	1528	ASN
1	A	1541	GLN
1	A	1643	ASN
1	A	1667	ASN
1	A	1736	ASN

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Mol	Chain	Res	Type
1	A	1755	GLN
1	A	1818	GLN
1	A	1894	GLN
1	A	2051	GLN
1	A	2130	ASN
1	A	2171	HIS
1	A	2209	GLN
1	A	2218	HIS
1	A	2346	GLN
1	A	2430	ASN
1	A	2468	ASN
1	A	2621	ASN
1	A	2677	GLN
1	A	2827	HIS
1	A	2987	ASN
1	A	3032	GLN
1	A	3145	ASN
1	A	3772	ASN
1	A	3822	HIS
1	A	3845	ASN
1	A	3865	GLN
1	A	3912	ASN
1	A	4062	GLN
1	A	4258	ASN
1	A	4326	ASN
1	A	4490	GLN
1	A	4506	ASN
1	A	4595	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry (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	$\#\|Z\| > 2$
2	ADP	A	4701	-	28,29,29	0.45	0	43,45,45	0.49	0
2	ADP	A	4704	-	28,29,29	0.45	0	43,45,45	0.52	0
2	ADP	A	4703	-	28,29,29	0.47	0	43,45,45	0.51	0
3	ATP	A	4702	-	32,33,33	0.51	0	48,52,52	0.60	0

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
2	ADP	A	4701	-	-	3/16/32/32	0/3/3/3
2	ADP	A	4704	-	-	2/16/32/32	0/3/3/3
2	ADP	A	4703	-	-	1/16/32/32	0/3/3/3
3	ATP	A	4702	-	-	0/22/38/38	0/3/3/3

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	4701	ADP	C5'-O5'-PA-O2A
2	A	4701	ADP	C5'-O5'-PA-O3A
2	A	4701	ADP	O4'-C4'-C5'-O5'
2	A	4704	ADP	O4'-C4'-C5'-O5'
2	A	4703	ADP	C2'-C1'-N9-C8
2	A	4704	ADP	C3'-C4'-C5'-O5'

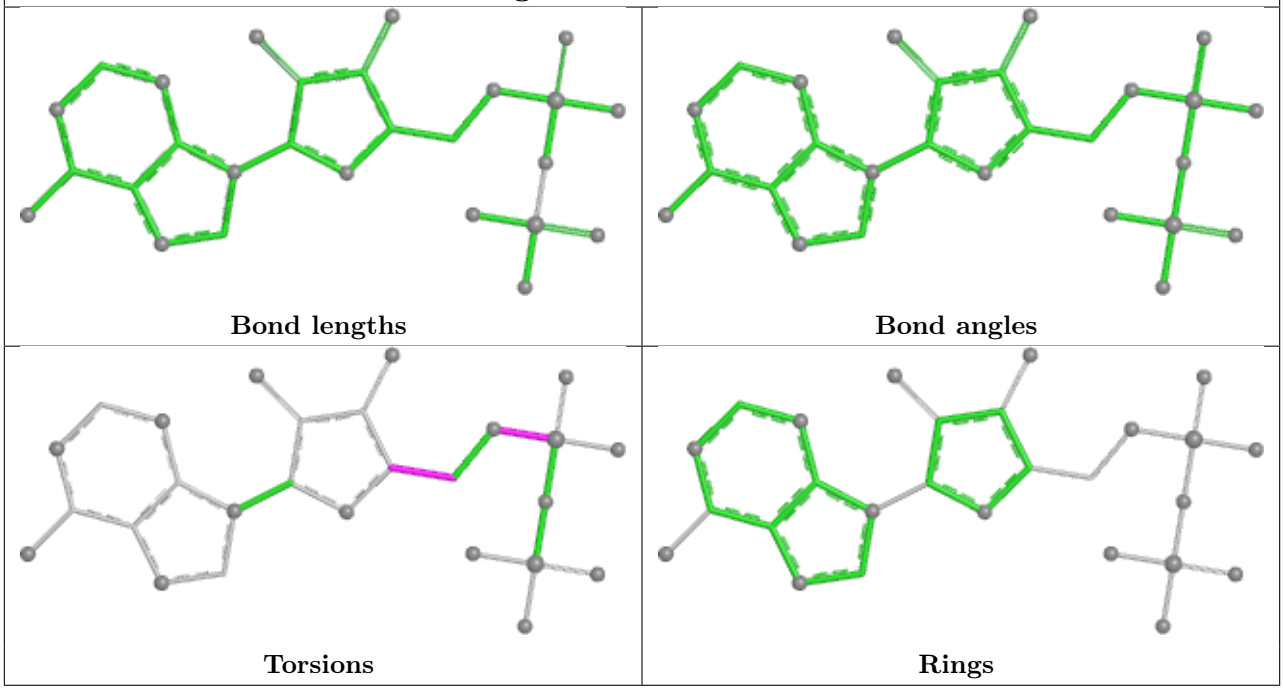
There are no ring outliers.

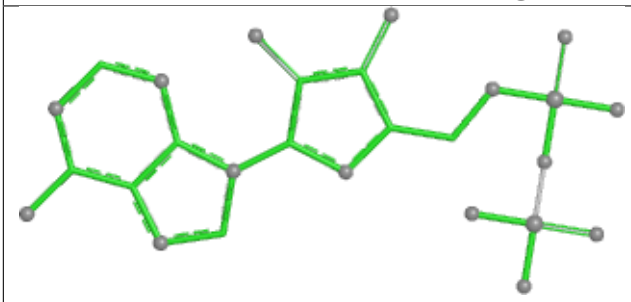
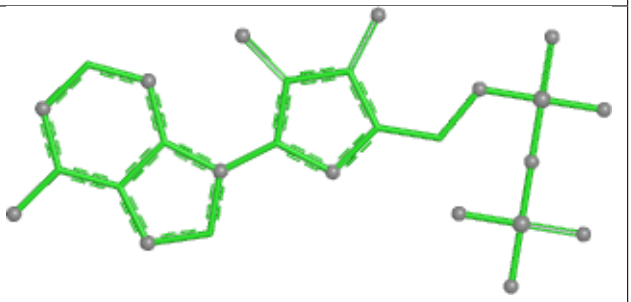
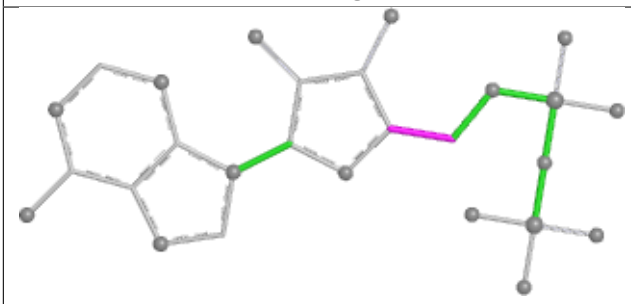
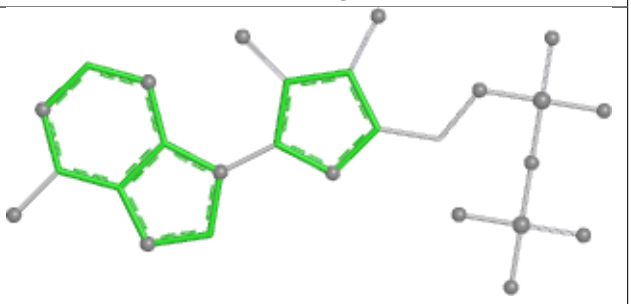
4 monomers are involved in 11 short contacts:

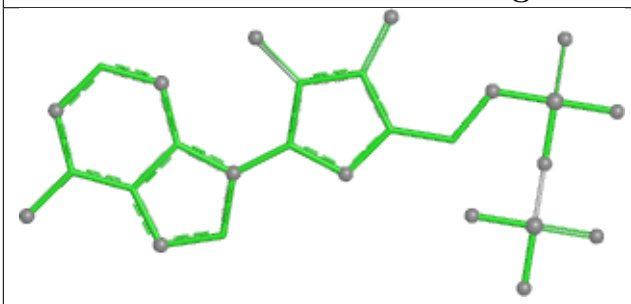
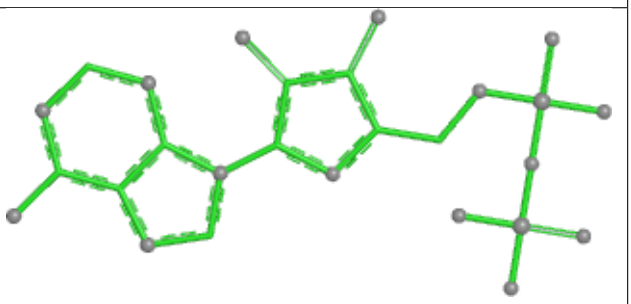
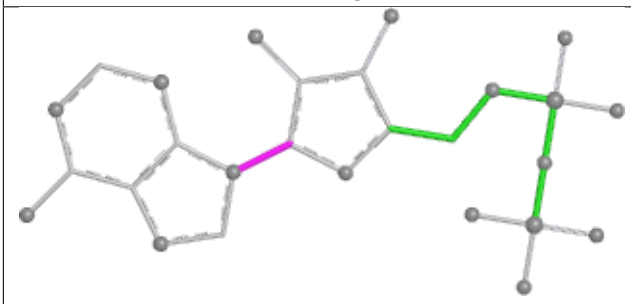
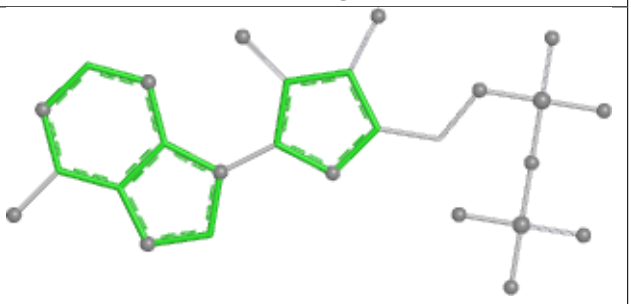
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	4701	ADP	3	0
2	A	4704	ADP	2	0
2	A	4703	ADP	4	0
3	A	4702	ATP	2	0

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.

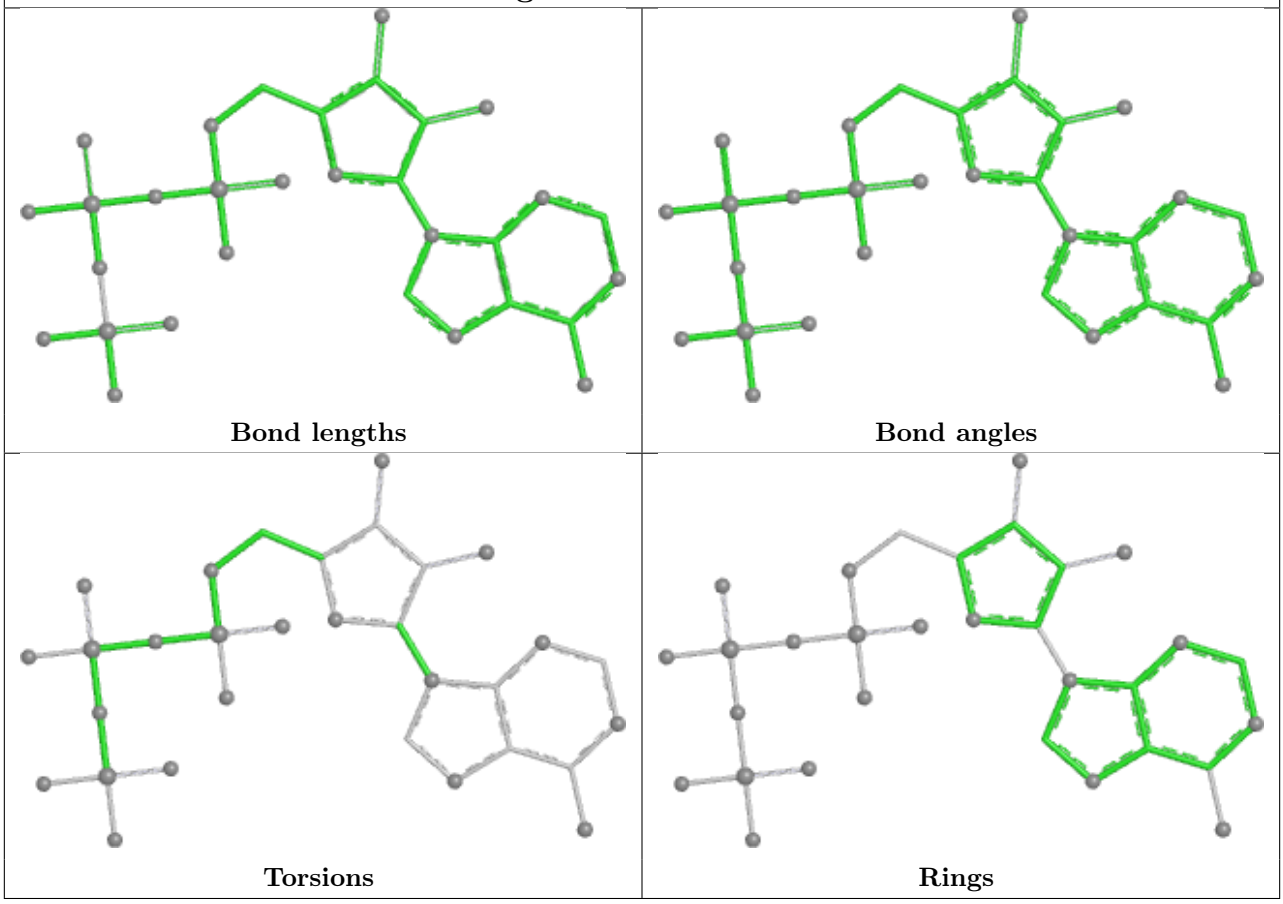
Ligand ADP A 4701



Ligand ADP A 4704	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand ADP A 4703	
 Bond lengths	 Bond angles
 Torsions	 Rings

Ligand ATP A 4702



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.

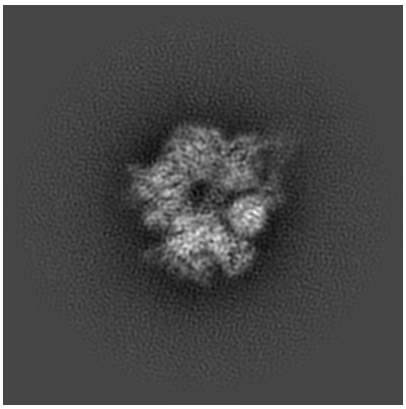
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-44717. These allow visual inspection of the internal detail of the map and identification of artifacts.

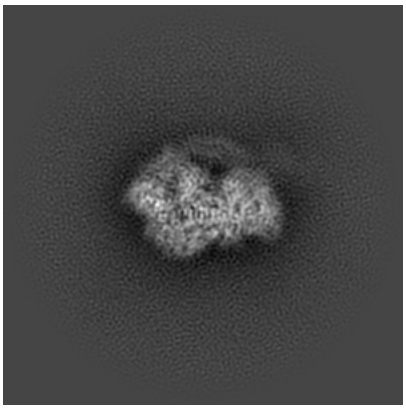
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

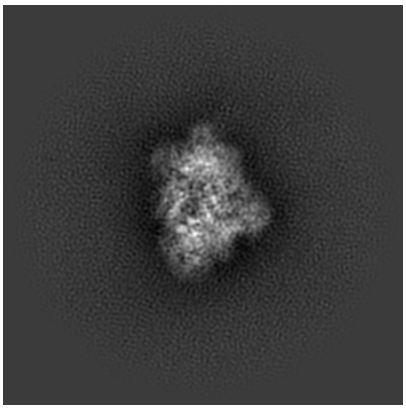
6.1.1 Primary map



X

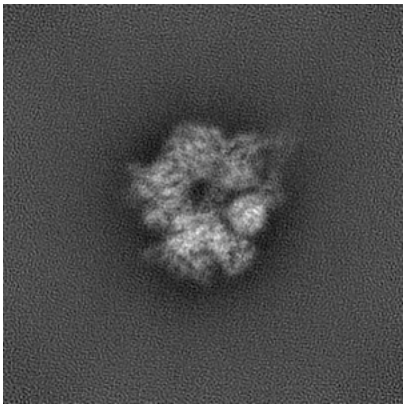


Y

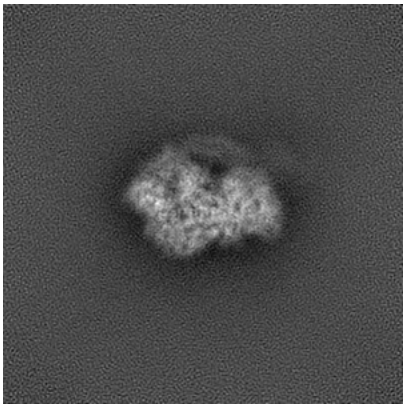


Z

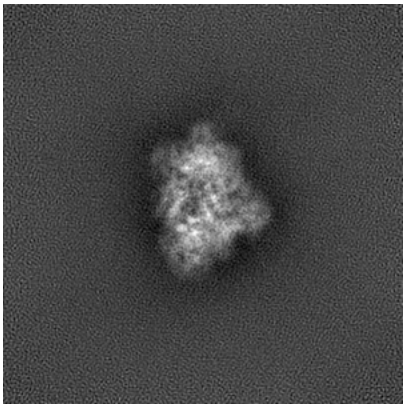
6.1.2 Raw map



X



Y

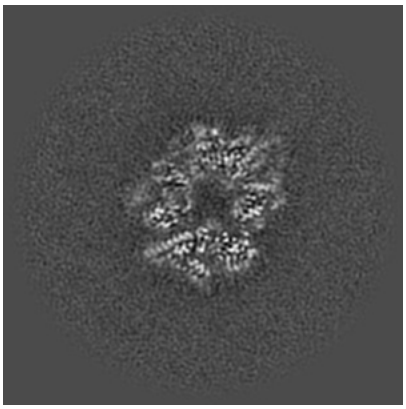


Z

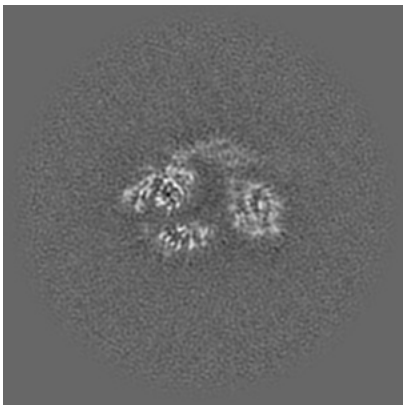
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

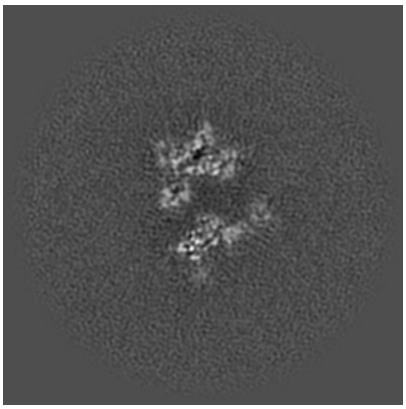
6.2.1 Primary map



X Index: 128

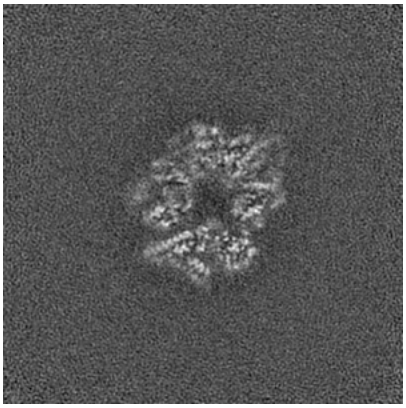


Y Index: 128

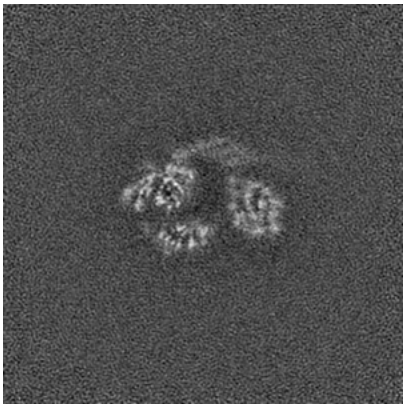


Z Index: 128

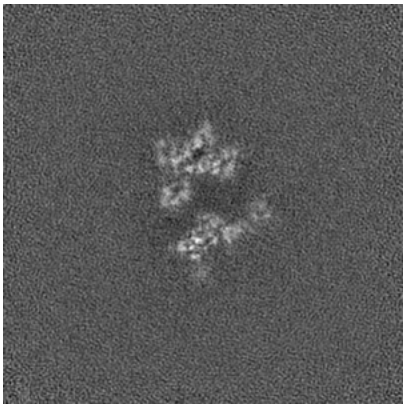
6.2.2 Raw map



X Index: 128



Y Index: 128

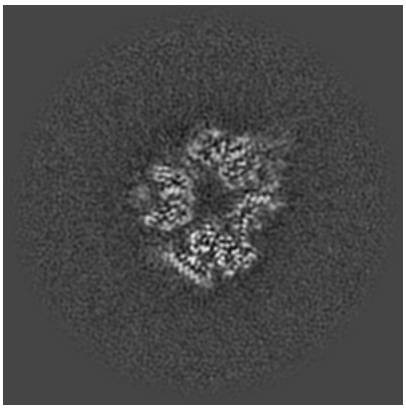


Z Index: 128

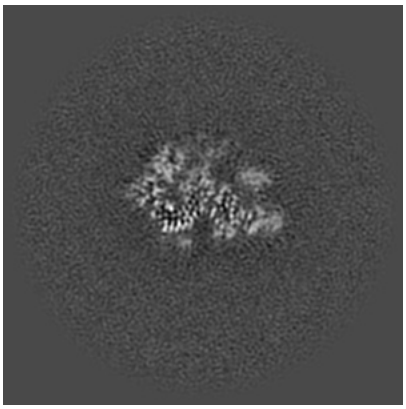
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

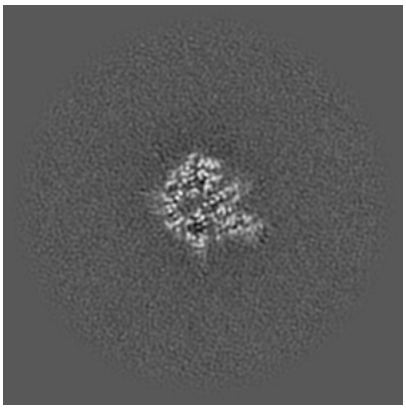
6.3.1 Primary map



X Index: 131

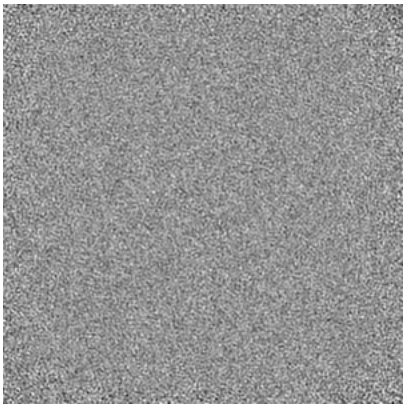


Y Index: 112

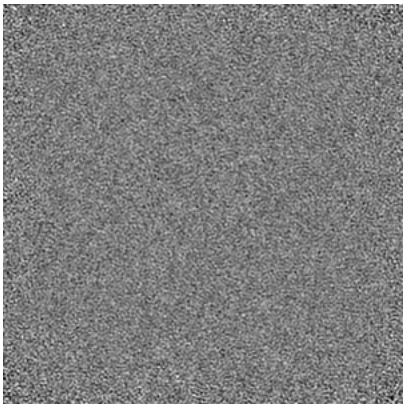


Z Index: 102

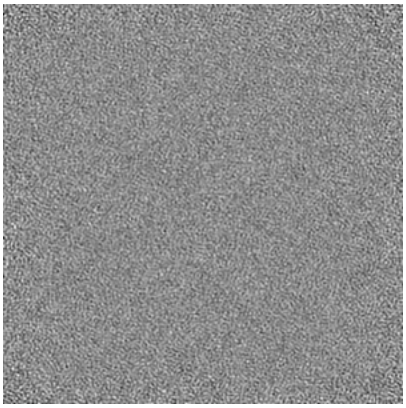
6.3.2 Raw map



X Index: 0



Y Index: 0

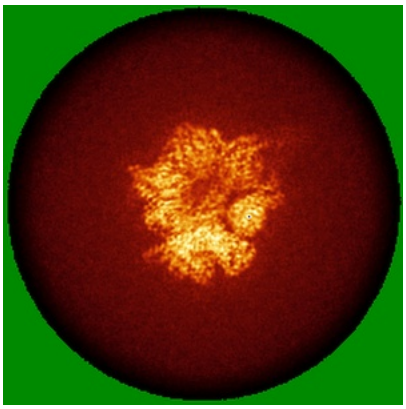


Z Index: 0

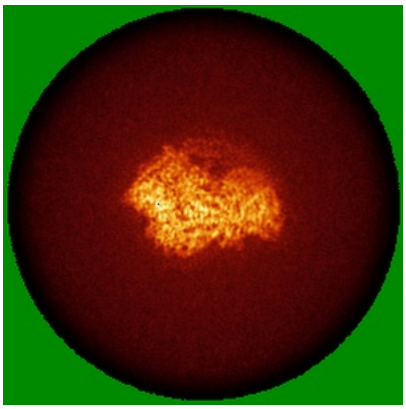
The images above show the largest variance slices of the map in three orthogonal directions.

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

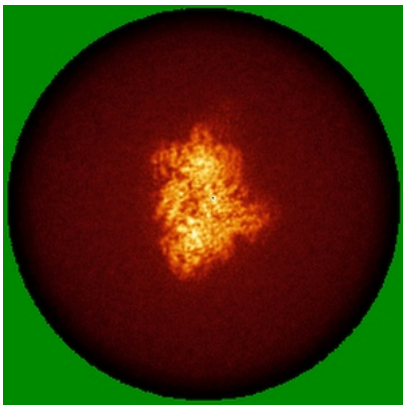
6.4.1 Primary map



X

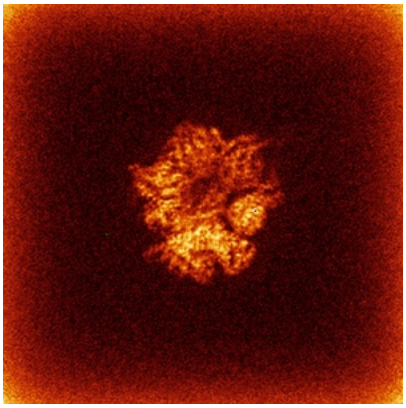


Y

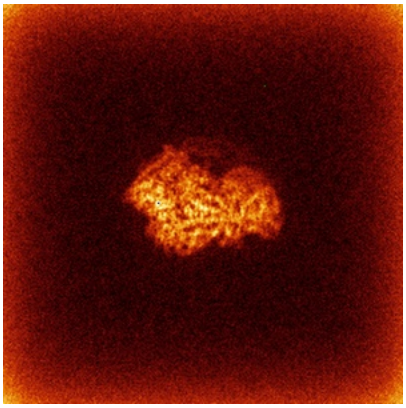


Z

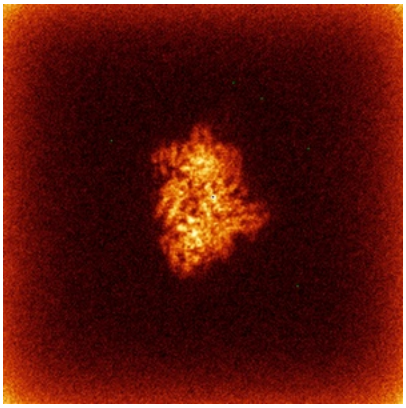
6.4.2 Raw map



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.

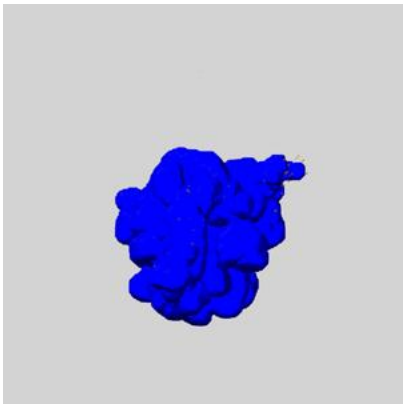
6.6 Mask visualisation

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

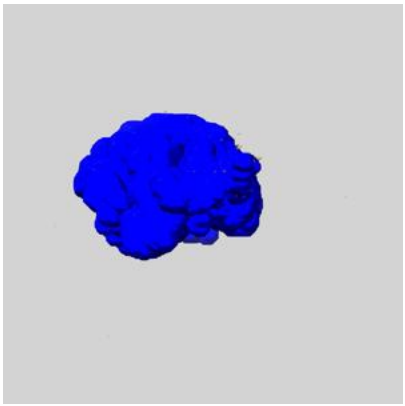
A mask typically either:

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

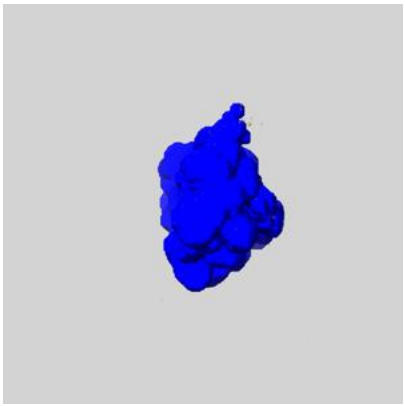
6.6.1 emd_44717_msk_1.map



X



Y

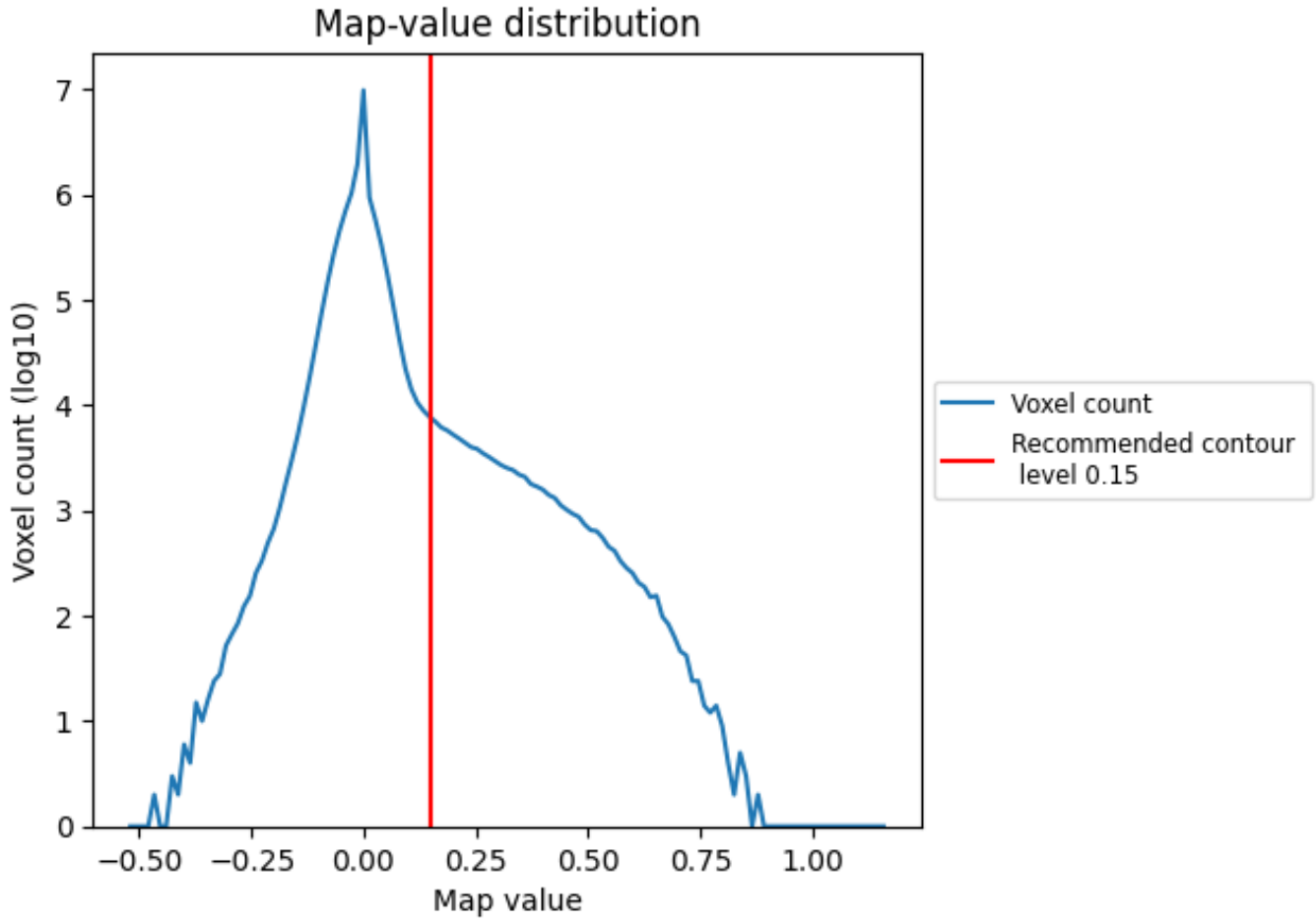


Z

7 Map analysis

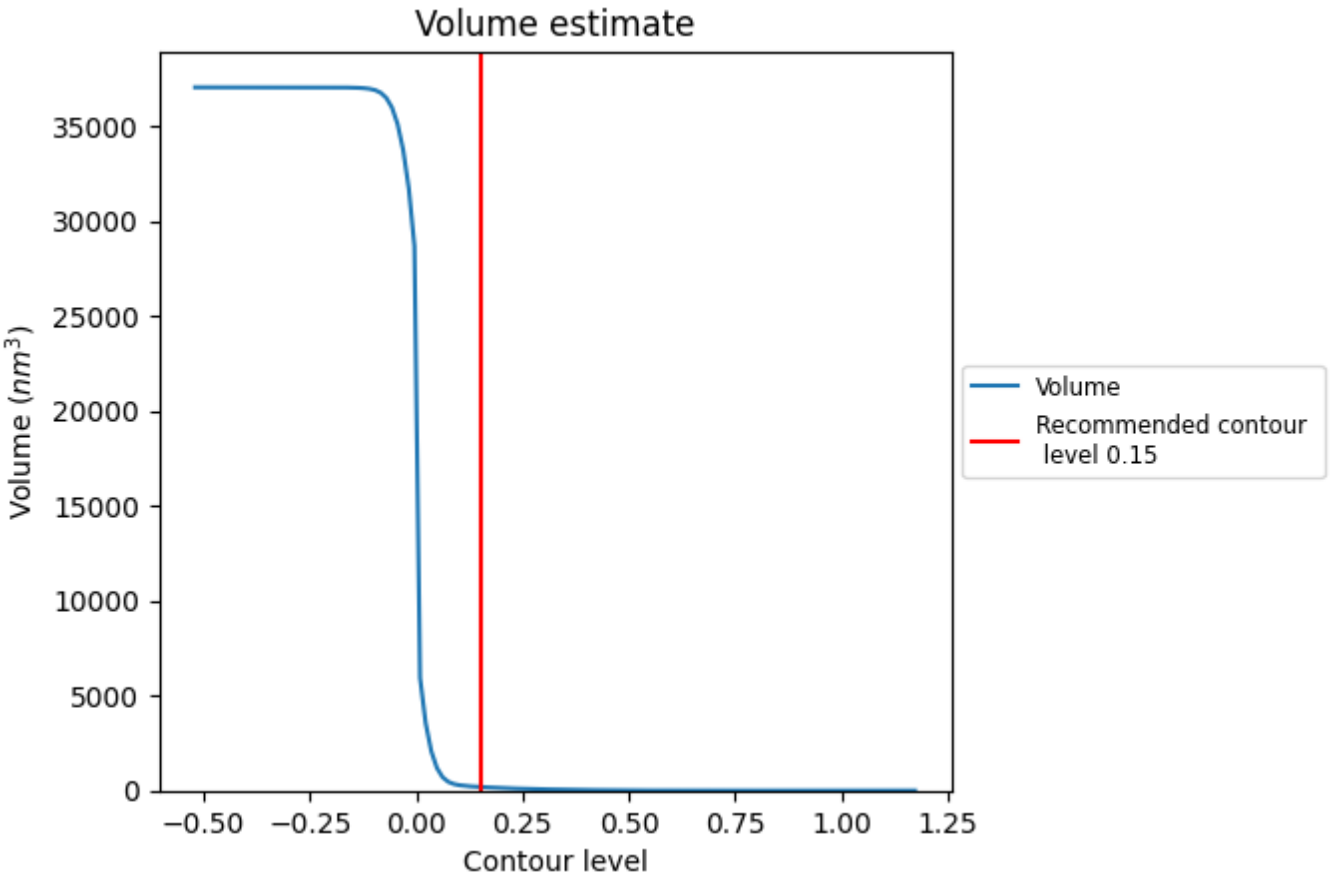
This section contains the results of statistical analysis of the map.

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.

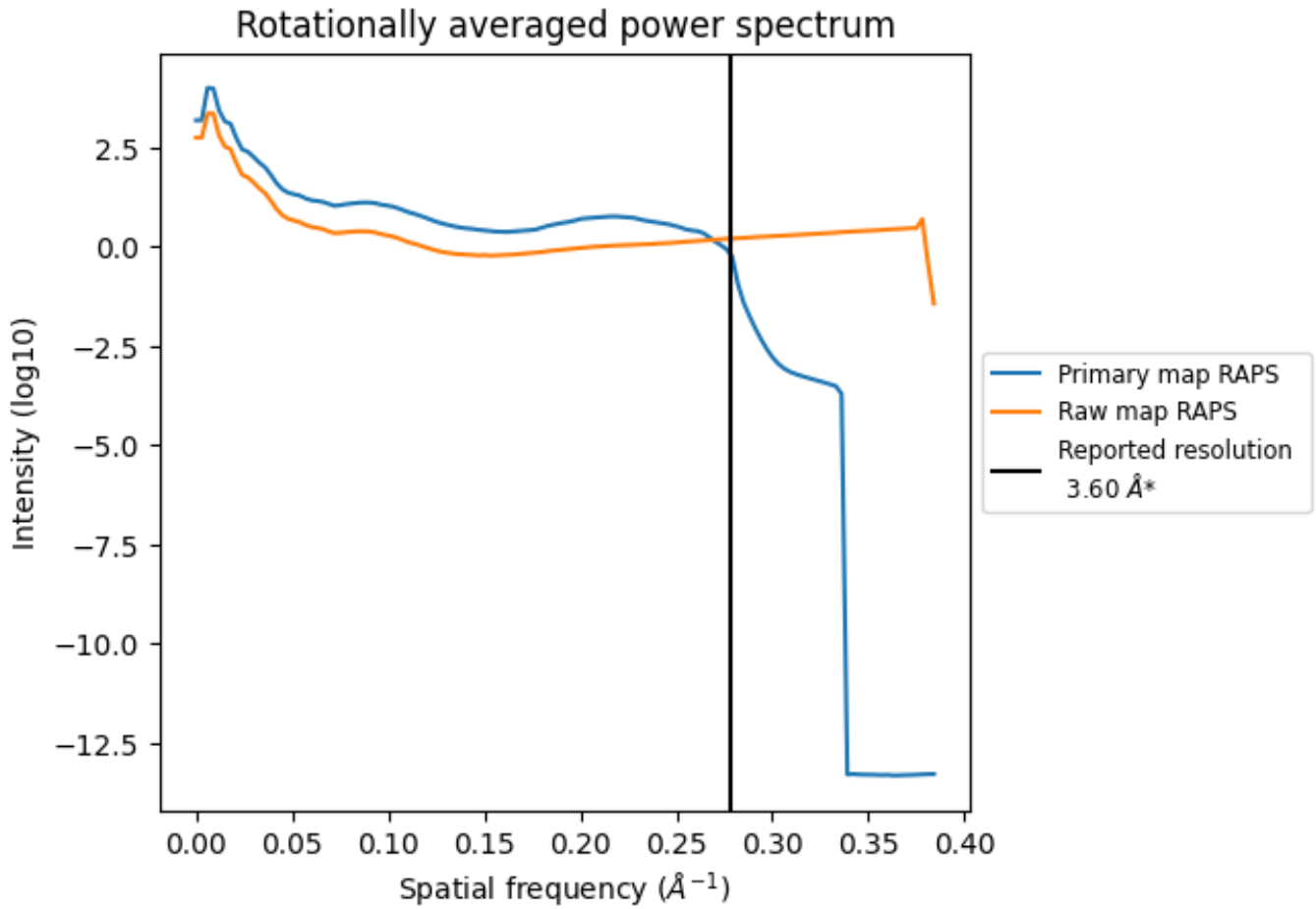
7.2 Volume estimate



The volume at the recommended contour level is 189 nm^3; this corresponds to an approximate mass of 170 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)

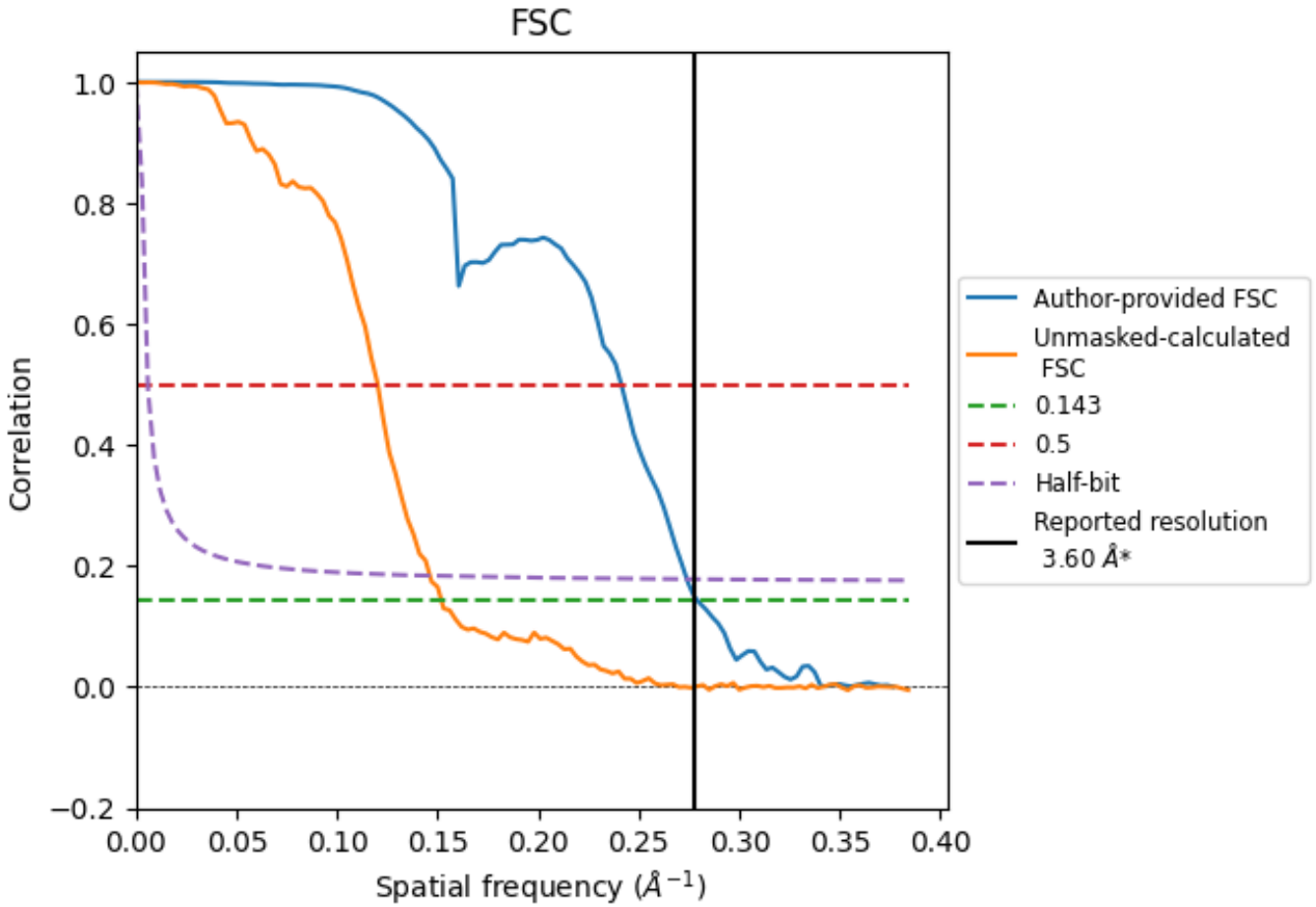


*Reported resolution corresponds to spatial frequency of 0.278 Å^{-1}

8 Fourier-Shell correlation

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

8.1 FSC



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

8.2 Resolution estimates (i)

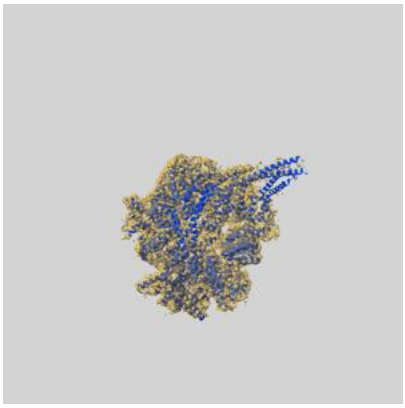
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.58	4.14	3.65
Unmasked-calculated*	6.58	8.32	6.84

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

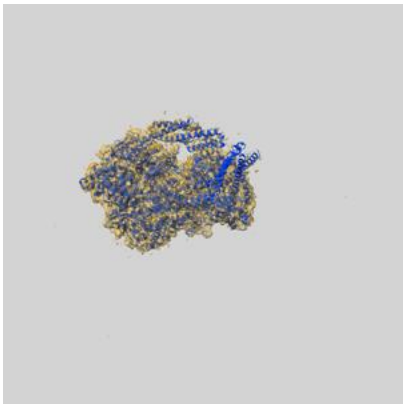
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-44717 and PDB model 9BN0. Per-residue inclusion information can be found in section 3 on page 5.

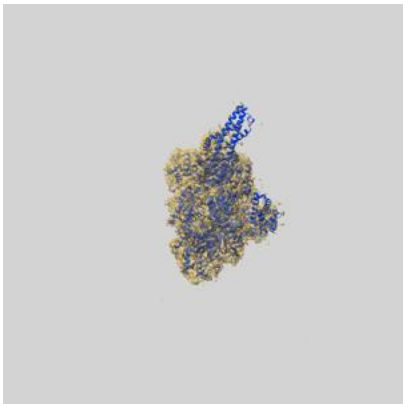
9.1 Map-model overlay



X



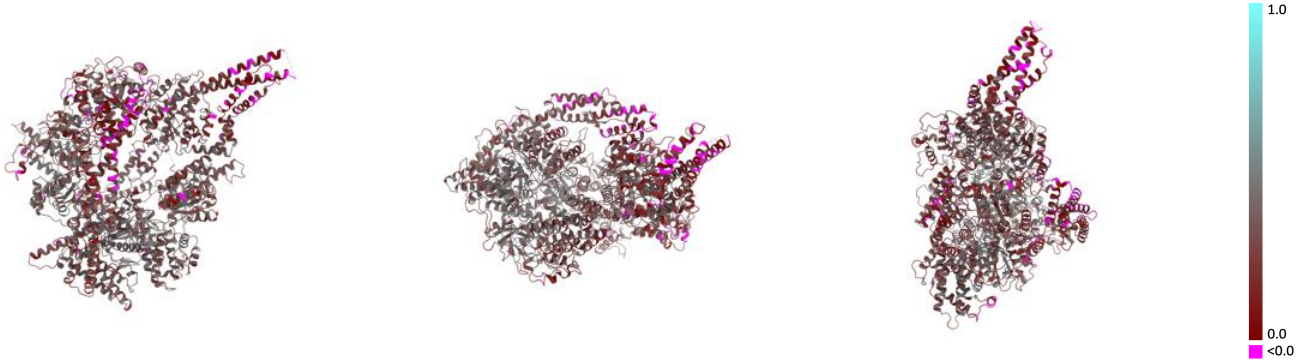
Y



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.

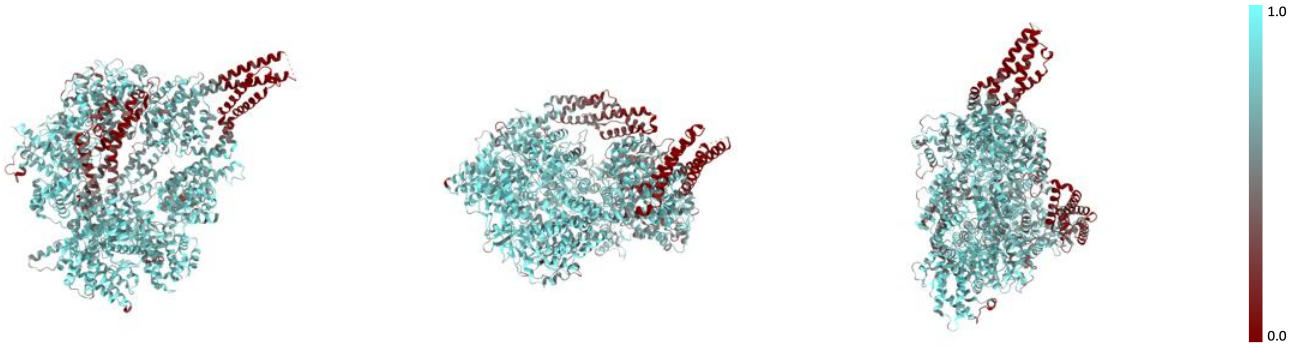
9.2 Q-score mapped to coordinate model (i)



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.

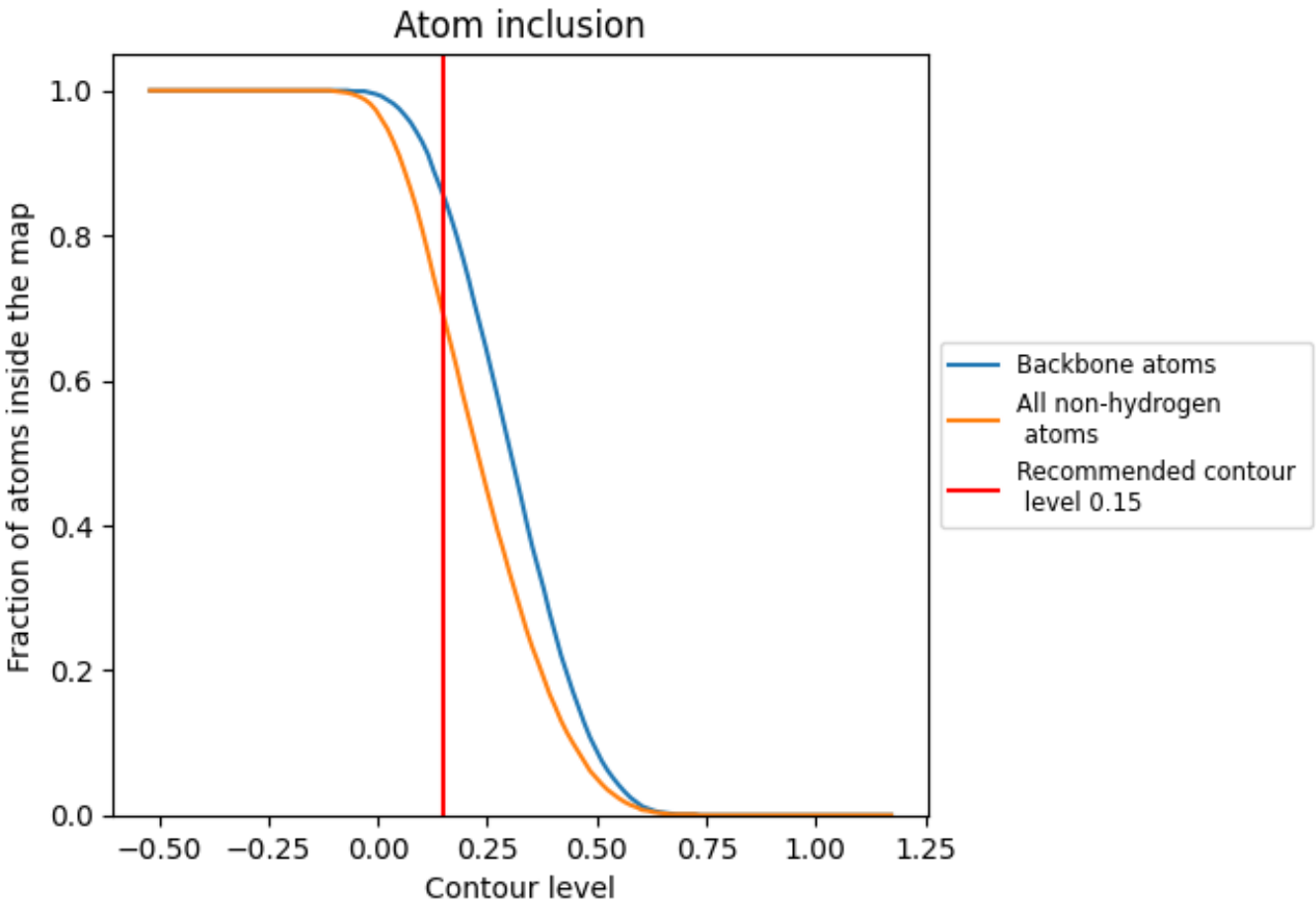
9.3 Atom inclusion mapped to coordinate model (i)



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, 86% of all backbone atoms, 69% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.15) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6900	0.3120
A	0.6900	0.3120