Full wwPDB EM Validation Report ⓘ

Apr 24, 2025 – 10:53 AM EDT

PDB ID	:	9BMV / pdb_00009bmv
EMDB ID	:	EMD-44712
Title	:	State-7a-post1 of motor domain from full-length human dynein-1 in 5 mM ADP
Authors	:	Chai, P.; Zhang, K.
Deposited on	:	2024-05-02
Resolution	:	3.70 Å(reported)

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

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

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

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

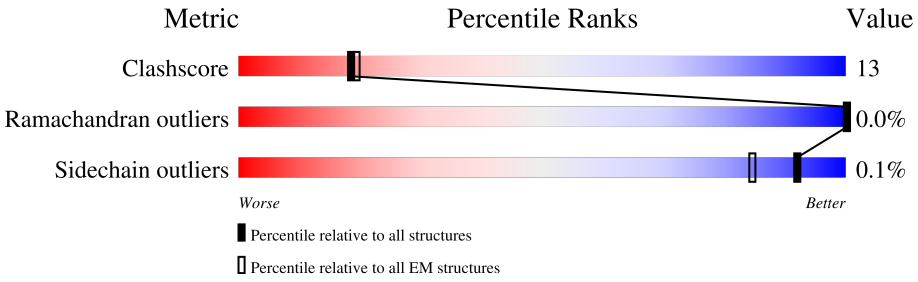
EMDB validation analysis	:	0.0.1.dev117
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.42

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 3.70 Å.

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



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

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	9% 46% 20% 35%

2 Entry composition

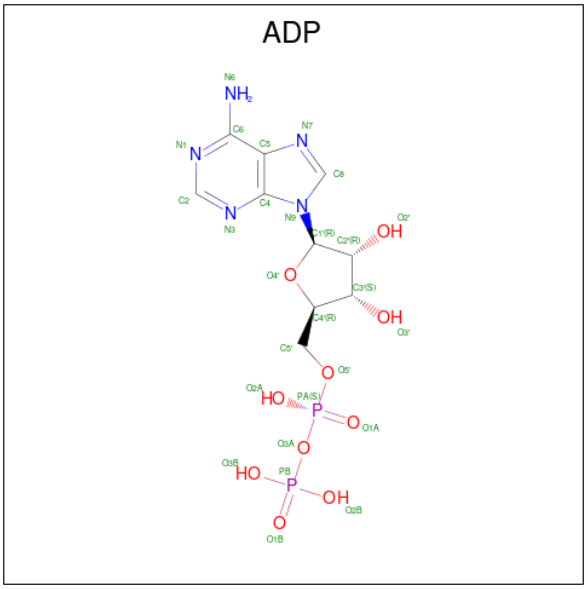
There are 4 unique types of molecules in this entry. The entry contains 24616 atoms, of which 0 are hydrogens and 0 are deuteriums.

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.

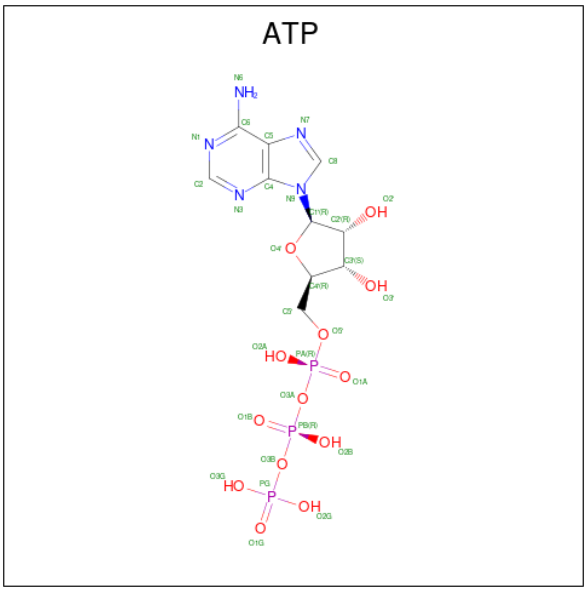
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3043	24503	15606	4234	4541	122	0	0

- 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
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	
2	A	1	Total	C	N	O	P	0
			27	10	5	10	2	

- 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	

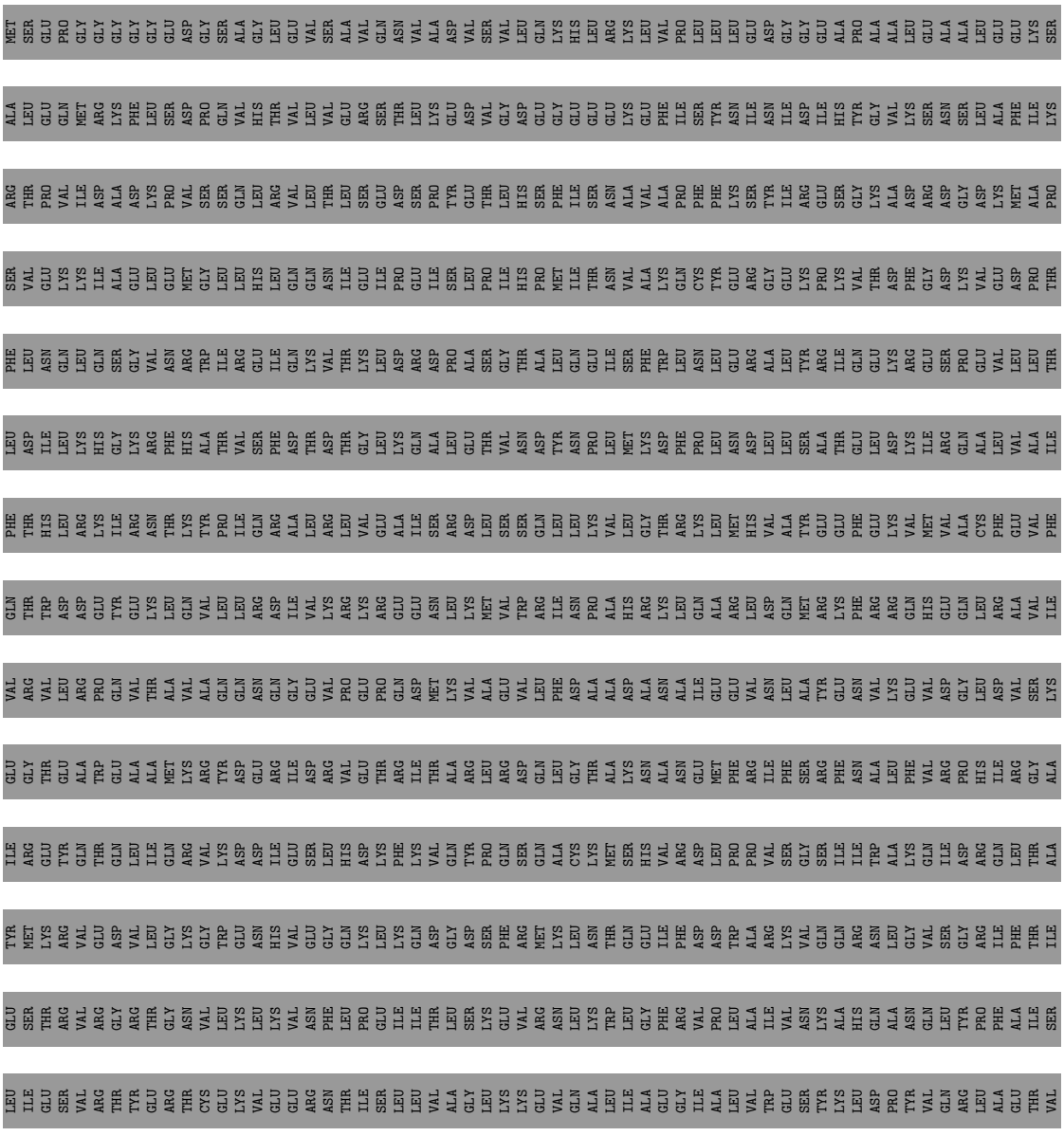
- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

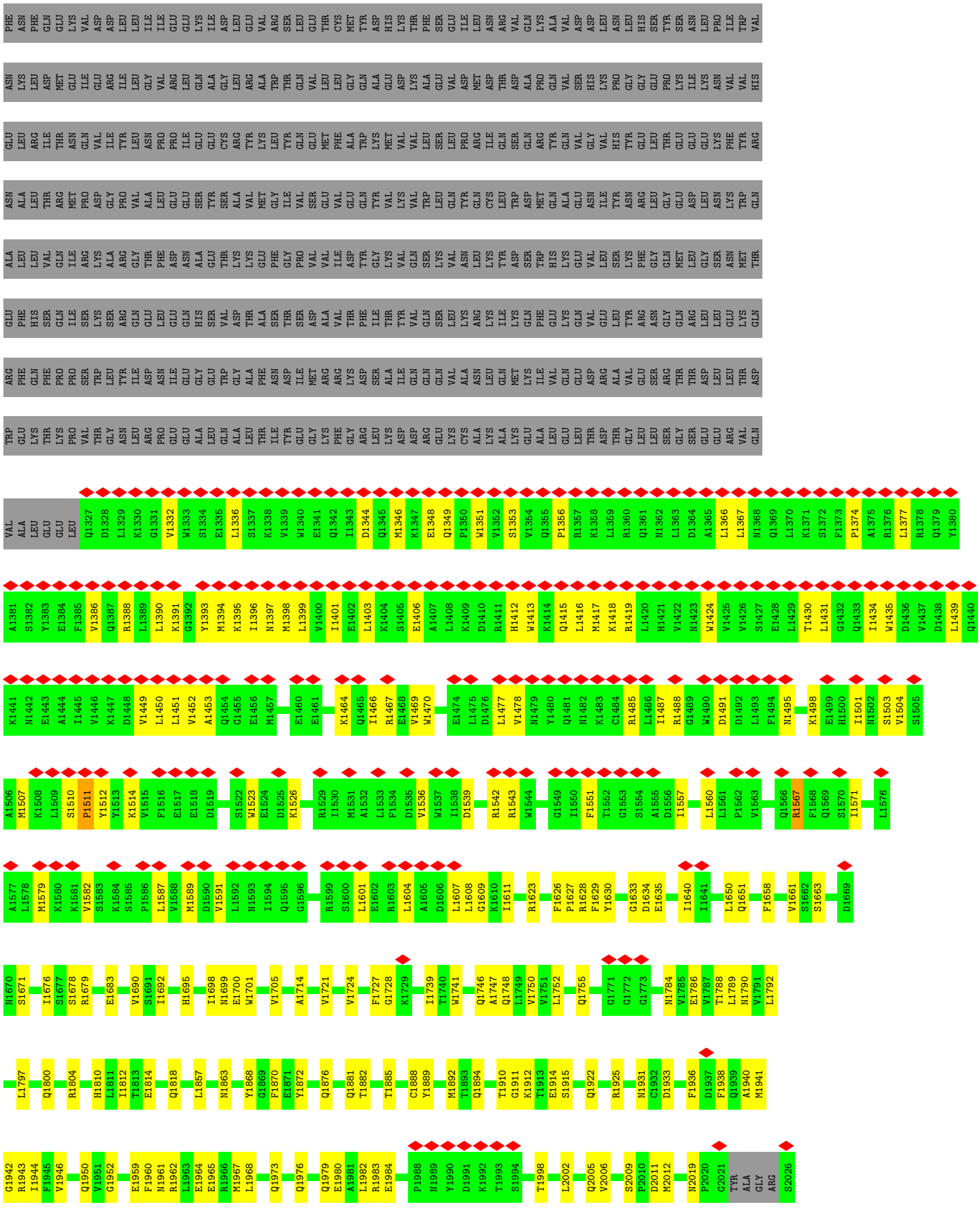
Mol	Chain	Residues	Atoms		AltConf
4	A	1	Total	Mg	0
			1	1	

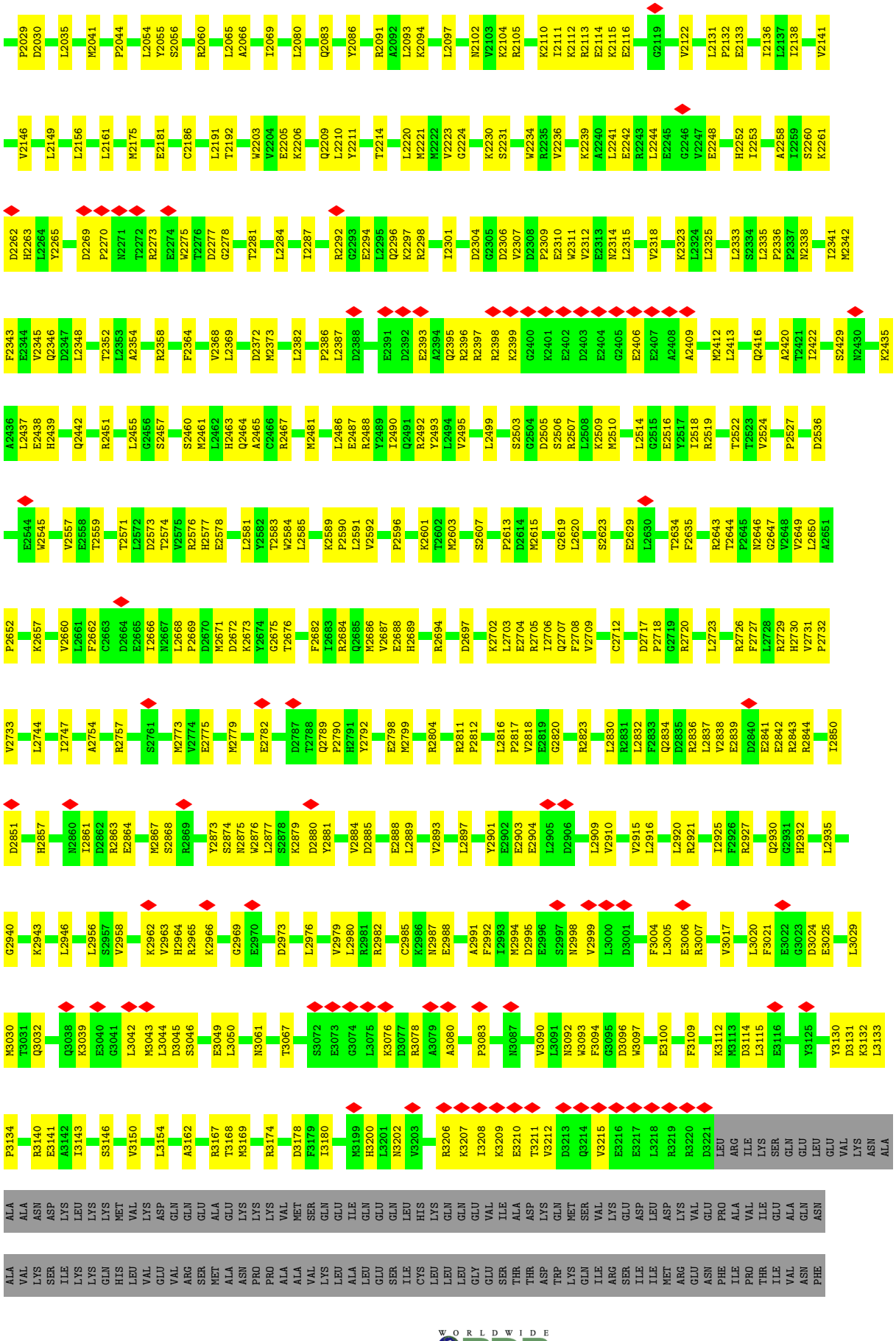
3 Residue-property plots (i)

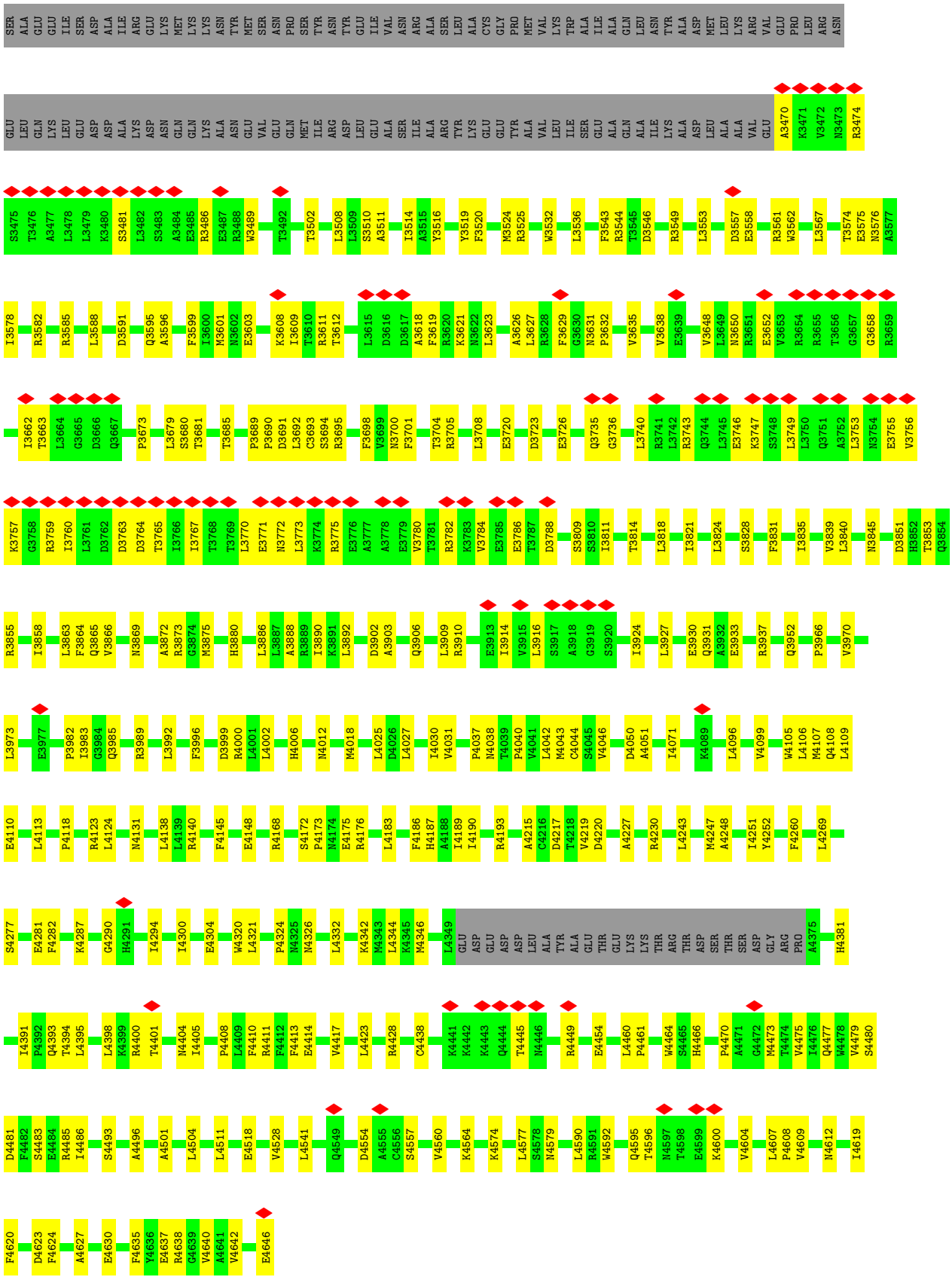
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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






P2029 D2030 L2035 M2041 P2044 L2054 Y2055 S2056 R2060 L2065 A2066 I2069 L2080 Q2083 Y2086 R2091 A2092 L2093 K2094 L2097 N2102 V2103 K2104 R2105 K2110 I2111 K2112 R2113 E2114 K2115 E2116 G2119 V2122 L2131 P2132 E2133 I2136 L2137 I2138 V2141
V2146 L2149 L2156 L2161 M2175 E2181 C2186 L2191 T2192 W2203 V2204 E2205 K2206 Q2209 L2210 Y2211 T2214 L2220 M2221 M2222 V2223 G2224 K2230 S2231 W2234 R2235 V2236 K2239 A2240 L2241 E2242 R2243 L2244 E2245 G2246 V2247 E2248 H2252 I2253 A2258 I2259 S2260 K2261
D2262 H2263 L2264 Y2265 D2269 P2270 N2271 T2272 R2273 E2274 W2275 T2276 D2277 G2278 T2281 L2284 I2287 R2292 G2293 E2294 L2295 Q2296 K2297 R2298 I2301 D2304 C2305 D2306 V2307 D2308 P2309 E2310 W2311 V2312 E2313 M2314 L2315 V2318 K2323 L2324 L2325 L2333 S2334 L2335 P2336 P2337 N2338 I2341 M2342
F2343 E2344 V2345 Q2346 D2347 L2348 T2352 L2353 A2354 R2358 F2364 V2368 L2369 D2372 M2373 L2382 P2386 L2387 D2388 E2391 D2392 E2393 A2394 Q2395 R2396 R2397 R2398 K2399 G2400 K2401 E2402 D2403 E2404 G2405 E2406 E2407 A2408 A2409 M2412 L2413 Q2416 A2420 T2421 I2422 S2429 N2430 K2435
A2436 L2437 E2438 H2439 Q2442 R2451 L2455 G2456 S2457 S2460 M2461 L2462 H2463 Q2464 A2465 C2466 R2467 M2481 L2486 E2487 R2488 Y2489 I2490 Q2491 R2492 Y2493 L2494 V2495 L2499 S2503 G2504 D2505 S2506 R2507 L2508 K2509 M2510 L2514 G2515 E2516 Y2517 I2518 R2519 T2522 T2523 V2524 P2527 D2536
E2544 W2545 V2557 E2558 T2559 T2571 L2572 D2573 T2574 W2575 R2576 H2577 E2578 L2581 Y2582 T2583 W2584 L2585 K2589 P2590 L2591 V2592 P2596 K2601 T2602 M2603 S2607 P2613 D2614 M2615 G2619 L2620 S2623 E2629 L2630 T2634 F2635 R2643 T2644 P2645 N2646 G2647 V2648 V2649 L2650 A2651
P2652 K2657 V2660 L2661 F2662 C2663 D2664 E2665 I2666 N2667 L2668 P2669 D2670 M2671 D2672 K2673 Y2674 G2675 T2676 F2682 I2683 R2684 Q2685 M2686 V2687 E2688 H2689 R2694 D2697 K2702 L2703 E2704 R2705 I2706 Q2707 F2708 V2709 C2712 D2717 P2718 G2719 R2720 L2723 R2726 F2727 L2728 R2729 H2730 V2731 P2732
V2733 L2744 I2747 A2754 R2757 S2761 M2773 V2774 E2775 M2779 E2782 D2787 T2788 Q2789 P2790 H2791 Y2792 E2798 M2799 R2804 R2811 P2812 L2816 P2817 V2818 E2819 G2820 R2823 L2830 R2831 L2832 F2833 Q2834 D2835 R2836 L2837 V2838 E2839 D2840 E2841 E2842 R2843 R2844 I2850
D2851 H2857 N2860 I2861 D2862 R2863 E2864 M2867 S2868 R2869 Y2873 S2874 N2875 W2876 L2877 S2878 K2879 D2880 Y2881 V2884 D2885 E2888 L2889 V2893 L2897 Y2901 E2902 E2903 E2904 L2905 D2906 L2909 V2910 V2915 L2916 L2920 R2921 I2925 F2926 R2927 Q2930 G2931 H2932 L2935
G2940 K2943 L2946 L2956 S2957 V2958 K2962 V2963 H2964 R2965 K2966 G2969 E2970 D2973 L2976 V2979 L2980 R2981 R2982 C2985 K2986 N2987 E2988 A2991 F2992 I2993 M2994 D2995 E2996 S2997 N2998 V2999 L3000 D3001 F3004 L3005 E3006 R3007 V3017 L3020 F3021 E3022 G3023 D3024 E3025 L3029
M3030 T3031 Q3032 Q3038 K3039 E3040 G3041 L3042 M3043 L3044 D3045 S3046 E3049 L3050 N3061 T3067 S3072 E3073 G3074 L3075 K3076 D3077 R3078 A3079 A3080 P3083 M3087 V3090 L3091 M3092 W3093 P3094 G3095 D3096 W3097 E3100 F3109 K3112 M3113 D3114 L3115 E3116 Y3125 Y3130 D3131 K3132 L3133
P3134 R3140 E3141 A3142 I3143 S3146 V3150 L3154 A3162 R3167 T3168 M3169 R3174 D3178 F3179 I3180 M3199 H3200 L3201 W3202 V3203 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 GLN
ALA ALA ASN ASP LYS LEU LYS LYS MET VAL LYS ASP GLN GLN GLU ALA GLU LYS LYS VAL MET VAL SER GLN GLU ALA LEU GLU GLN LEU HIS LYS GLN GLN GLU VAL ILE ALA ASP LYS GLN MET SER VAL LYS GLN ILE ARG SER GLU ILE ILE MET ARG GLU ASN PHE PRO ALA VAL ILE GLU ALA GLN GLN ASN
ALA VAL LYS SER ILE LYS LYS GLN HIS LEU VAL GLU VAL ARG SER MET ALA ASN PRO ALA ALA VAL LYS LEU ALA LEU GLU ILE CYS LEU LEU LEU GLY GLU SER THR THR ASP TRP LYS GLN MET SER VAL LYS 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 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 ALA VAL GLU A3470 K3471 V3472 N3473 R3474
S3475 T3476 A3477 L3478 L3479 K3480 S3481 L3482 S3483 A3484 E3485 R3486 E3487 R3488 W3489 T3492 T3502 L3508 L3509 S3510 A3511 I3514 A3515 Y3516 Y3519 F3520 M3524 R3525 W3532 L3536 F3543 R3544 T3545 D3546 R3549 L3553 D3557 E3558 R3561 W3562 L3567 T3574 E3575 N3576 A3577
I3578 R3582 R3585 L3588 D3591 Q3595 A3596 F3599 I3600 M3601 N3602 E3603 K3608 I3609 T3610 R3611 T3612 L3615 D3616 D3617 A3618 F3619 R3620 K3621 N3622 L3623 A3626 L3627 R3628 F3629 G3630 N3631 P3632 V3635 V3638 E3639 V3648 L3649 N3650 R3651 E3652 V3653 R3654 R3655 T3656 G3657 G3658 R3659
T3662 T3663 L3664 G3665 D3666 Q3667 P3673 L3679 S3680 T3681 T3685 P3689 P3690 D3691 L3692 C3693 S3694 R3695 F3698 V3699 N3700 F3701 T3704 R3705 L3708 E3720 D3723 E3726 Q3735 G3736 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 S3809 S3810 I3811 T3814 L3818 I3821 L3824 S3828 F3831 I3835 V3839 L3840 N3845 D3851 H3852 T3853 Q3854
R3855 I3858 L3863 F3864 Q3865 V3866 N3869 A3872 R3873 G3874 M3875 H3880 L3886 L3887 A3888 R3889 I3890 K3891 L3892 D3902 A3903 Q3906 L3909 R3910 E3913 I3914 V3915 L3916 S3917 A3918 G3919 S3920 I3924 L3927 E3930 Q3931 A3932 E3933 R3937 Q3952 P3966 V3970
L3973 E3977 P3982 I3983 G3984 Q3985 R3989 L3992 F3996 D3999 R4000 L4001 L4002 H4006 N4012 M4018 L4025 D4026 L4027 I4030 V4031 P4037 N4038 T4039 P4040 V4041 L4042 M4043 C4044 S4045 V4046 D4050 A4051 I4071 K4089 L4096 V4099 W4105 L4106 M4107 Q4108 L4109
E4110 L4113 P4118 R4123 L4124 N4131 L4138 L4139 R4140 F4145 E4148 R4168 S4172 P4173 N4174 E4175 R4176 L4183 F4186 H4187 A4188 I4189 I4190 R4193 A4215 C4216 D4217 T4218 V4219 D4220 A4227 R4230 L4243 M4247 A4248 I4251 Y4252 F4260 L4269
S4277 E4281 F4282 K4287 G4290 H4291 I4294 I4300 E4304 W4320 L4321 P4324 N4325 M4326 L4332 K4342 M4343 L4344 K4345 M4346 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
I4391 P4392 Q4393 T4394 L4395 L4398 K4399 R4400 T4401 N4404 I4405 P4408 L4409 F4410 R4411 F4412 F4413 E4414 V4417 L4423 R4428 C4438 K4441 K4442 K4443 Q4444 T4445 N4446 R4449 E4454 L4460 P4461 W4464 S4465 H4466 P4470 A4471 G4472 M4473 T4474 V4475 I4476 Q4477 W4478 V4479 S4480
D4481 F4482 S4483 E4484 R4485 I4486 S4493 A4496 A4501 L4504 L4511 E4518 V4528 L4541 Q4549 D4554 A4555 C4556 S4557 V4560 K4564 K4574 L4577 S4578 N4579 L4590 R4591 W4592 Q4595 T4596 N4597 T4598 E4599 K4600 V4604 L4607 P4608 V4609 N4612 I4619
F4620 D4623 F4624 A4627 E4630 F4635 Y4636 E4637 R4638 G4639 V4640 A4641 V4642 E4646

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	47280	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	105000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.717	Depositor
Minimum map value	-0.337	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.024	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	329.984, 329.984, 329.984	wwPDB
Map dimensions	320, 320, 320	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.0312, 1.0312, 1.0312	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	0.27	0/25022	0.50	0/33900

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	1567	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	24503	0	24574	631	0
2	A	81	0	36	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	31	0	12	1	0
4	A	1	0	0	0	0
All	All	24616	0	24622	631	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 13.

All (631) 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:4189:ILE:HD11	1:A:4321:LEU:HA	1.55	0.88
1:A:1551:PHE:HA	1:A:1557:ILE:HD11	1.63	0.80
1:A:3178:ASP:HB2	1:A:3585:ARG:HH21	1.48	0.78
1:A:4609:VAL:HG12	1:A:4642:VAL:HB	1.66	0.75
1:A:3502:THR:HG21	1:A:3544:ARG:HG3	1.67	0.74
1:A:2457:SER:HG	1:A:2584:TRP:HZ2	1.36	0.73
1:A:2252:HIS:HB2	1:A:2301:ILE:HG22	1.70	0.73
1:A:2590:PRO:HB2	1:A:2731:VAL:HG12	1.72	0.72
1:A:4398:LEU:HB2	1:A:4414:GLU:HG3	1.70	0.72
1:A:2503:SER:HB3	1:A:2514:LEU:HD13	1.71	0.72
1:A:4193:ARG:NH2	1:A:4637:GLU:O	2.21	0.72
1:A:2603:MET:HE3	2:A:4703:ADP:C4	2.25	0.71
1:A:3818:LEU:HA	1:A:4346:MET:HE1	1.71	0.70
1:A:3638:VAL:HG12	1:A:3681:THR:HB	1.72	0.70
1:A:2413:LEU:HA	1:A:2416:GLN:HE21	1.55	0.70
1:A:3818:LEU:HD23	1:A:4346:MET:HE1	1.73	0.70
1:A:1912:LYS:HG2	1:A:2041:MET:HG3	1.75	0.69
1:A:2720:ARG:HH22	1:A:3083:PRO:HG3	1.57	0.69
1:A:1857:LEU:HD22	1:A:1868:TYR:HB2	1.74	0.69
1:A:2879:LYS:HG3	1:A:2880:ASP:H	1.58	0.68
1:A:2186:CYS:HA	1:A:2191:LEU:HD12	1.75	0.68
1:A:3588:LEU:HD11	1:A:3638:VAL:HG11	1.75	0.68
1:A:2747:ILE:HD11	2:A:4703:ADP:C6	2.30	0.67
1:A:3100:GLU:HG3	1:A:3130:TYR:HE1	1.58	0.67
1:A:3924:ILE:HB	1:A:3927:LEU:HD23	1.75	0.67
1:A:1925:ARG:HH12	1:A:2011:ASP:HB3	1.60	0.67
1:A:3167:ARG:NH1	1:A:3519:TYR:OH	2.26	0.67
1:A:4187:HIS:ND1	1:A:4252:TYR:OH	2.27	0.66
1:A:2943:LYS:HE2	1:A:3067:THR:HB	1.78	0.66
1:A:2030:ASP:OD2	1:A:4131:ASN:ND2	2.28	0.66
1:A:2935:LEU:HD22	1:A:3094:PHE:HE1	1.61	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3546:ASP:O	1:A:3735:GLN:NE2	2.24	0.66
1:A:2775:GLU:OE1	1:A:2857:HIS:NE2	2.23	0.65
1:A:2113:ARG:HA	1:A:2116:GLU:HG2	1.78	0.65
1:A:3486:ARG:HA	1:A:3489:TRP:HD1	1.62	0.65
1:A:2261:LYS:NZ	1:A:2310:GLU:O	2.28	0.65
1:A:2581:LEU:HD13	1:A:2591:LEU:HD13	1.79	0.65
1:A:2958:VAL:HA	1:A:2991:ALA:HB3	1.78	0.65
1:A:1728:GLY:O	1:A:1784:ASN:ND2	2.31	0.64
1:A:2304:ASP:OD1	1:A:2726:ARG:NH2	2.31	0.64
1:A:1406:GLU:HG3	1:A:3658:GLY:HA3	1.77	0.64
1:A:1714:ALA:HA	1:A:1870:PHE:HE2	1.63	0.64
1:A:2620:LEU:HD11	1:A:2634:THR:HG21	1.79	0.64
1:A:4408:PRO:HA	1:A:4411:ARG:HE	1.63	0.63
1:A:1695:HIS:HB3	1:A:1700:GLU:HG3	1.81	0.63
1:A:3845:ASN:HB3	1:A:3858:ILE:HD11	1.81	0.63
1:A:2573:ASP:OD1	1:A:2576:ARG:NH2	2.31	0.63
1:A:2816:LEU:HD12	1:A:2817:PRO:HD2	1.80	0.63
1:A:3886:LEU:HD11	1:A:4346:MET:HG3	1.81	0.63
1:A:4031:VAL:O	1:A:4123:ARG:NH1	2.32	0.63
1:A:3576:ASN:ND2	1:A:3700:ASN:O	2.32	0.63
1:A:3910:ARG:HE	1:A:4344:LEU:HD11	1.64	0.63
1:A:4600:LYS:NZ	1:A:4604:VAL:O	2.32	0.63
1:A:3209:LYS:HA	1:A:3486:ARG:HH12	1.65	0.62
1:A:4105:TRP:HD1	1:A:4108:GLN:HE21	1.46	0.62
1:A:3005:LEU:HD11	1:A:3078:ARG:HH11	1.65	0.62
1:A:4564:LYS:HG3	1:A:4646:GLU:HG3	1.80	0.62
1:A:2897:LEU:HD21	1:A:2909:LEU:HB2	1.81	0.62
1:A:2258:ALA:HB1	1:A:2682:PHE:HD1	1.65	0.62
1:A:2461:MET:HG2	1:A:2583:THR:HG21	1.82	0.62
1:A:4046:VAL:HG21	1:A:4148:GLU:HG3	1.81	0.62
1:A:1797:LEU:HD22	1:A:2060:ARG:HH22	1.64	0.61
1:A:2629:GLU:N	1:A:2629:GLU:OE1	2.31	0.61
1:A:2823:ARG:HH22	1:A:2868:SER:HB3	1.65	0.61
1:A:2660:VAL:HG22	1:A:2707:GLN:HB2	1.82	0.61
1:A:4040:PRO:HB3	1:A:4124:LEU:HD23	1.83	0.61
1:A:1452:VAL:HG22	1:A:1512:TYR:HE1	1.66	0.61
1:A:3691:ASP:OD1	1:A:3692:LEU:N	2.34	0.61
1:A:3914:ILE:H	1:A:3937:ARG:HH12	1.47	0.61
1:A:1941:MET:HG2	1:A:1944:ILE:HD12	1.83	0.61
1:A:3209:LYS:HB2	1:A:3486:ARG:HH22	1.66	0.61
1:A:3743:ARG:NE	1:A:3746:GLU:OE2	2.23	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4186:PHE:O	1:A:4189:ILE:HG22	2.00	0.60
1:A:3508:LEU:HD23	1:A:3536:LEU:HD21	1.83	0.60
1:A:3567:LEU:HD12	1:A:3595:GLN:HE22	1.66	0.60
1:A:2065:LEU:HD11	1:A:2133:GLU:HB3	1.83	0.60
1:A:2112:LYS:HG3	1:A:2122:VAL:HG11	1.83	0.60
1:A:4619:ILE:HG22	1:A:4620:PHE:HD1	1.67	0.60
1:A:2915:VAL:HG23	1:A:2946:LEU:HD11	1.83	0.60
1:A:2717:ASP:HB3	1:A:2720:ARG:HG3	1.84	0.59
1:A:3207:LYS:NZ	1:A:3210:GLU:OE1	2.35	0.59
1:A:2451:ARG:O	1:A:2455:LEU:HD12	2.02	0.59
1:A:3608:LYS:HE3	1:A:3631:ASN:HB3	1.84	0.59
1:A:1800:GLN:OE1	1:A:1804:ARG:NH1	2.36	0.59
1:A:2495:VAL:HG21	1:A:2524:VAL:HG11	1.84	0.59
1:A:2613:PRO:O	1:A:2657:LYS:NZ	2.35	0.59
1:A:4030:ILE:HG21	1:A:4145:PHE:HZ	1.68	0.59
1:A:1965:GLU:N	1:A:1965:GLU:OE1	2.34	0.59
1:A:2464:GLN:HG2	1:A:2583:THR:HG23	1.85	0.59
1:A:1403:LEU:HD23	1:A:1450:LEU:HD21	1.85	0.58
1:A:2297:LYS:O	1:A:2338:ASN:ND2	2.36	0.58
1:A:4454:GLU:OE1	1:A:4461:PRO:HA	2.04	0.58
1:A:2451:ARG:HG2	1:A:2455:LEU:HD11	1.86	0.58
1:A:2790:PRO:HB3	1:A:3076:LYS:HE2	1.86	0.58
1:A:3708:LEU:HD23	1:A:3809:SER:HA	1.85	0.58
1:A:2325:LEU:HB3	1:A:2333:LEU:HB2	1.85	0.58
1:A:3208:ILE:O	1:A:3212:VAL:HG23	2.04	0.58
1:A:2386:PRO:HA	1:A:2416:GLN:HE22	1.68	0.57
1:A:2592:VAL:HB	1:A:2733:VAL:HG12	1.85	0.57
1:A:3525:ARG:NH1	1:A:3576:ASN:OD1	2.37	0.57
1:A:4398:LEU:HD21	1:A:4493:SER:HA	1.86	0.57
1:A:2083:GLN:HB2	1:A:2086:TYR:CD1	2.39	0.57
1:A:2830:LEU:HD22	1:A:2850:ILE:HD13	1.85	0.57
1:A:3154:LEU:HD13	1:A:3516:TYR:CD1	2.40	0.57
1:A:4099:VAL:HB	1:A:4106:LEU:HD21	1.86	0.57
1:A:2578:GLU:OE2	1:A:2607:SER:OG	2.21	0.57
1:A:2221:MET:HG2	1:A:2343:PHE:HB2	1.85	0.57
1:A:2287:ILE:HA	1:A:2294:GLU:HG3	1.85	0.57
1:A:2615:MET:SD	1:A:2615:MET:N	2.78	0.57
1:A:2818:VAL:HG11	1:A:2861:ILE:HD12	1.87	0.57
1:A:3553:LEU:O	1:A:3582:ARG:NH1	2.32	0.56
1:A:2744:LEU:HA	1:A:2747:ILE:HG22	1.86	0.56
1:A:1416:LEU:HD23	1:A:1449:VAL:HG11	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2175:MET:SD	1:A:2175:MET:N	2.78	0.56
1:A:2694:ARG:HD3	1:A:2697:ASP:HB3	1.87	0.56
1:A:1911:GLY:O	1:A:1915:SER:OG	2.15	0.56
1:A:3763:ASP:OD2	1:A:3765:THR:OG1	2.22	0.56
1:A:1543:ARG:NH1	1:A:1609:GLY:HA2	2.21	0.56
1:A:2623:SER:HA	1:A:2668:LEU:HB3	1.88	0.56
1:A:1960:PHE:HE1	1:A:1968:LEU:HG	1.71	0.56
1:A:3756:VAL:HG13	1:A:3757:LYS:H	1.70	0.56
1:A:2964:HIS:ND1	1:A:2965:ARG:O	2.38	0.56
1:A:4168:ARG:NH2	1:A:4217:ASP:OD1	2.39	0.56
1:A:4496:ALA:HB2	1:A:4504:LEU:HD21	1.88	0.56
1:A:1415:GLN:O	1:A:1419:ARG:HG2	2.06	0.55
1:A:2102:ASN:OD1	1:A:2105:ARG:NH2	2.33	0.55
1:A:1396:ILE:HD12	1:A:1439:LEU:HD12	1.86	0.55
1:A:3562:TRP:HB3	1:A:3567:LEU:HD22	1.88	0.55
1:A:3756:VAL:HG23	1:A:3760:ILE:HB	1.89	0.55
1:A:2091:ARG:NH1	2:A:4701:ADP:O3'	2.40	0.55
1:A:2910:VAL:N	2:A:4704:ADP:N1	2.50	0.55
1:A:1982:LEU:HD21	1:A:2012:MET:HB2	1.88	0.55
1:A:2505:ASP:OD1	1:A:2733:VAL:HG23	2.07	0.55
1:A:2965:ARG:O	1:A:2966:LYS:HG2	2.06	0.55
1:A:1979:GLN:HB3	1:A:2035:LEU:HD13	1.89	0.55
1:A:4574:LYS:HB3	1:A:4627:ALA:HB2	1.89	0.55
1:A:1571:ILE:HD11	1:A:1607:LEU:HD12	1.89	0.55
1:A:1501:ILE:HA	1:A:1504:VAL:HG22	1.89	0.55
1:A:2499:LEU:O	1:A:2503:SER:OG	2.22	0.55
1:A:3902:ASP:OD1	1:A:3903:ALA:N	2.40	0.55
1:A:2270:PRO:HA	1:A:2273:ARG:HH22	1.73	0.54
1:A:2323:LYS:HB3	1:A:2335:LEU:HB3	1.89	0.54
1:A:2437:LEU:HD21	1:A:2451:ARG:HG3	1.89	0.54
1:A:1332:VAL:HB	1:A:1377:LEU:HD22	1.89	0.54
1:A:3839:VAL:HG21	1:A:3863:LEU:HA	1.88	0.54
1:A:2999:VAL:HG13	1:A:3005:LEU:HD21	1.89	0.54
1:A:3851:ASP:OD2	1:A:3853:THR:OG1	2.25	0.54
1:A:3755:GLU:OE2	1:A:3759:ARG:NH1	2.41	0.54
1:A:4096:LEU:HD13	1:A:4105:TRP:HH2	1.73	0.54
1:A:1925:ARG:NH2	1:A:1952:GLY:O	2.40	0.54
1:A:2925:ILE:HD12	1:A:3090:VAL:HG11	1.88	0.54
1:A:2976:LEU:HA	1:A:2979:VAL:HG12	1.88	0.54
1:A:2325:LEU:HD23	1:A:2333:LEU:HD12	1.90	0.54
1:A:3828:SER:HB3	1:A:4140:ARG:HG2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4414:GLU:HA	1:A:4417:VAL:HG22	1.90	0.54
1:A:1510:SER:O	1:A:1512:TYR:N	2.41	0.53
1:A:4281:GLU:N	1:A:4281:GLU:OE1	2.41	0.53
1:A:1810:HIS:NE2	1:A:1876:GLN:O	2.40	0.53
1:A:2422:ILE:HG23	1:A:2487:GLU:HG2	1.90	0.53
1:A:3502:THR:HG23	1:A:3543:PHE:HA	1.90	0.53
1:A:2481:MET:SD	1:A:2481:MET:N	2.81	0.53
1:A:1658:PHE:HB2	1:A:1661:VAL:HB	1.90	0.53
1:A:2619:GLY:HA2	1:A:2662:PHE:HB3	1.90	0.53
1:A:4511:LEU:HD23	1:A:4560:VAL:HG13	1.89	0.53
1:A:2230:LYS:NZ	3:A:4702:ATP:O2B	2.33	0.53
1:A:3690:PRO:HA	1:A:3693:CYS:HB3	1.91	0.53
1:A:2684:ARG:HH12	1:A:2726:ARG:HE	1.55	0.53
1:A:2842:GLU:OE1	1:A:2842:GLU:N	2.33	0.53
1:A:3200:HIS:NE2	1:A:3747:LYS:HG3	2.24	0.53
1:A:2838:VAL:HG13	1:A:3093:TRP:CZ2	2.43	0.53
1:A:3474:ARG:HB2	1:A:3764:ASP:HB3	1.89	0.53
1:A:3966:PRO:HD2	1:A:4000:ARG:HG3	1.89	0.53
1:A:1946:VAL:HG13	1:A:2006:VAL:HG21	1.91	0.53
1:A:1968:LEU:HD21	1:A:2029:PRO:HG3	1.91	0.53
1:A:3162:ALA:HB2	1:A:3168:THR:HG21	1.91	0.53
1:A:3208:ILE:HG22	1:A:3486:ARG:NH1	2.23	0.53
1:A:3824:LEU:HD11	1:A:4044:CYS:SG	2.48	0.53
1:A:4470:PRO:HG3	1:A:4612:ASN:HD22	1.74	0.53
1:A:1478:VAL:HG11	1:A:1488:ARG:HE	1.74	0.53
1:A:1721:VAL:HA	1:A:1724:VAL:HG12	1.91	0.53
1:A:1398:MET:SD	1:A:1399:LEU:HD22	2.49	0.52
1:A:3635:VAL:HB	1:A:3679:LEU:HD23	1.89	0.52
1:A:3474:ARG:HB3	1:A:3765:THR:HG23	1.91	0.52
1:A:2644:THR:OG1	1:A:2647:GLY:O	2.27	0.52
1:A:3021:PHE:CD2	1:A:3029:LEU:HD22	2.45	0.52
1:A:4183:LEU:HD11	1:A:4215:ALA:HB1	1.91	0.52
1:A:4595:GLN:NE2	1:A:4596:THR:O	2.42	0.52
1:A:1752:LEU:HD11	1:A:1868:TYR:CZ	2.45	0.52
1:A:3872:ALA:HA	1:A:3875:MET:HE2	1.90	0.52
1:A:1959:GLU:OE2	1:A:2019:ASN:ND2	2.35	0.52
1:A:1959:GLU:OE1	1:A:1962:ARG:NH1	2.43	0.52
1:A:1477:LEU:HD23	1:A:1487:ILE:HD13	1.91	0.52
1:A:1579:MET:HA	1:A:1582:VAL:HG12	1.91	0.52
1:A:3131:ASP:OD1	1:A:3132:LYS:HG3	2.10	0.52
1:A:4541:LEU:HD11	1:A:4590:LEU:HB3	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1925:ARG:NH1	1:A:2011:ASP:HB3	2.25	0.52
1:A:2843:ARG:HH21	1:A:3093:TRP:HD1	1.58	0.52
1:A:4002:LEU:O	1:A:4006:HIS:ND1	2.41	0.52
1:A:4480:SER:O	1:A:4483:SER:OG	2.16	0.52
1:A:3910:ARG:NE	1:A:4344:LEU:HD11	2.24	0.52
1:A:4577:LEU:HD22	1:A:4638:ARG:HD2	1.92	0.52
1:A:4287:LYS:HD3	1:A:4290:GLY:HA2	1.91	0.51
1:A:1504:VAL:HA	1:A:1507:MET:HG3	1.92	0.51
1:A:2111:ILE:O	1:A:2115:LYS:HG3	2.10	0.51
1:A:2307:VAL:HG23	1:A:2345:VAL:HG11	1.91	0.51
1:A:2536:ASP:OD1	1:A:2576:ARG:NH1	2.43	0.51
1:A:4042:LEU:HD11	1:A:4138:LEU:HG	1.91	0.51
1:A:1418:LYS:HD2	1:A:1419:ARG:HD2	1.92	0.51
1:A:2666:ILE:O	1:A:2669:PRO:HD2	2.10	0.51
1:A:3481:SER:HB2	1:A:3770:LEU:HD11	1.92	0.51
1:A:1881:GLN:HE22	1:A:1889:TYR:HE2	1.59	0.51
1:A:1690:VAL:HG11	1:A:1705:VAL:HG22	1.93	0.51
1:A:2265:TYR:CZ	1:A:2314:ASN:HB2	2.46	0.51
1:A:2666:ILE:HG22	1:A:2723:LEU:HD21	1.91	0.51
1:A:4247:MET:HA	1:A:4251:ILE:HB	1.93	0.51
1:A:1748:GLN:O	1:A:1752:LEU:HG	2.11	0.51
1:A:1938:PHE:CE1	1:A:1967:MET:HG2	2.46	0.51
1:A:3873:ARG:NH1	1:A:4025:LEU:HB3	2.25	0.51
1:A:2623:SER:OG	1:A:3006:GLU:OE1	2.28	0.51
1:A:1390:LEU:HD23	1:A:1393:TYR:HD2	1.75	0.51
1:A:1634:ASP:OD1	1:A:1635:GLU:N	2.43	0.51
1:A:2406:GLU:HG2	1:A:2409:ALA:HB2	1.93	0.51
1:A:3821:ILE:HD12	1:A:4342:LYS:HG2	1.92	0.51
1:A:2223:VAL:HG21	1:A:2348:LEU:HG	1.93	0.51
1:A:2248:GLU:OE2	1:A:2292:ARG:NH1	2.39	0.51
1:A:2203:TRP:CH2	1:A:2236:VAL:HG11	2.46	0.51
1:A:2851:ASP:HB3	1:A:2867:MET:HE1	1.92	0.51
1:A:3044:LEU:HD13	1:A:3049:GLU:HG3	1.92	0.51
1:A:3549:ARG:NH2	1:A:3575:GLU:OE2	2.33	0.51
1:A:2393:GLU:O	1:A:2397:ARG:NH1	2.44	0.50
1:A:2192:THR:HB	1:A:2373:MET:HG2	1.93	0.50
1:A:3024:ASP:OD1	1:A:3025:GLU:N	2.43	0.50
1:A:1797:LEU:HD13	1:A:2060:ARG:HH12	1.76	0.50
1:A:2976:LEU:O	1:A:2980:LEU:HD23	2.10	0.50
1:A:2292:ARG:O	1:A:2292:ARG:HD3	2.12	0.50
1:A:2571:THR:H	1:A:2574:THR:HB	1.75	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4404:ASN:HB3	1:A:4410:PHE:CE2	2.46	0.50
1:A:2596:PRO:O	1:A:2601:LYS:NZ	2.45	0.50
1:A:2973:ASP:OD1	1:A:3007:ARG:NE	2.44	0.50
1:A:4404:ASN:HB3	1:A:4410:PHE:CZ	2.46	0.50
1:A:1557:ILE:HA	1:A:1560:LEU:HB2	1.93	0.50
1:A:2396:ARG:HG3	1:A:2399:LYS:HE2	1.94	0.50
1:A:1651:GLN:OE1	1:A:1663:SER:HA	2.12	0.50
1:A:1701:TRP:O	1:A:1705:VAL:HG23	2.11	0.50
1:A:1936:PHE:CD2	1:A:1938:PHE:CE1	3.00	0.50
1:A:2559:THR:HG22	1:A:2757:ARG:HB3	1.92	0.50
1:A:2969:GLY:HA2	1:A:3004:PHE:HE1	1.77	0.50
1:A:2275:TRP:NE1	1:A:2277:ASP:OD1	2.45	0.49
1:A:3909:LEU:HB3	1:A:4344:LEU:HD13	1.94	0.49
1:A:4381:HIS:HB2	1:A:4438:CYS:HB3	1.93	0.49
1:A:2492:ARG:HD2	1:A:2545:TRP:CE2	2.47	0.49
1:A:2643:ARG:NH1	1:A:2644:THR:O	2.45	0.49
1:A:3561:ARG:NH2	1:A:3603:GLU:OE2	2.44	0.49
1:A:4176:ARG:NH2	1:A:4220:ASP:OD1	2.40	0.49
1:A:1391:LYS:O	1:A:1395:LYS:HG2	2.12	0.49
1:A:1814:GLU:O	1:A:1818:GLN:HG2	2.12	0.49
1:A:2585:LEU:HD21	1:A:2709:VAL:HG11	1.94	0.49
1:A:1698:ILE:HD13	1:A:1701:TRP:HE1	1.77	0.49
1:A:2294:GLU:HA	1:A:2297:LYS:HD3	1.95	0.49
1:A:2461:MET:HG3	1:A:2584:TRP:HE1	1.78	0.49
1:A:3756:VAL:HG13	1:A:3757:LYS:N	2.28	0.49
1:A:1424:TRP:CZ3	1:A:1434:ILE:HG12	2.48	0.49
1:A:2789:GLN:HB2	1:A:2792:TYR:CE1	2.48	0.49
1:A:3916:LEU:HD12	1:A:3933:GLU:HG3	1.94	0.49
1:A:3970:VAL:HB	1:A:3989:ARG:HG2	1.93	0.49
1:A:2346:GLN:HB2	1:A:2726:ARG:HD2	1.94	0.49
1:A:2372:ASP:OD1	1:A:2429:SER:HA	2.12	0.49
1:A:2439:HIS:O	1:A:2442:GLN:HG2	2.12	0.49
1:A:2672:ASP:OD1	1:A:2673:LYS:N	2.41	0.49
1:A:1511:PRO:O	1:A:1514:LYS:HG2	2.12	0.49
1:A:2395:GLN:HB3	1:A:2398:ARG:HH22	1.77	0.49
1:A:3627:LEU:HD23	1:A:3662:ILE:HG21	1.94	0.49
1:A:2296:GLN:N	1:A:2296:GLN:OE1	2.46	0.49
1:A:2811:ARG:HB3	1:A:2812:PRO:HD3	1.93	0.49
1:A:1349:GLN:O	1:A:1430:THR:OG1	2.28	0.48
1:A:1882:THR:O	1:A:1885:THR:OG1	2.27	0.48
1:A:2514:LEU:O	1:A:2518:ILE:HG12	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1346:MET:HE1	1:A:1366:LEU:HD11	1.95	0.48
1:A:3788:ASP:N	1:A:3788:ASP:OD1	2.46	0.48
1:A:1747:ALA:O	1:A:1750:VAL:HG12	2.14	0.48
1:A:1952:GLY:HA2	1:A:2012:MET:HE1	1.94	0.48
1:A:2718:PRO:HB2	1:A:3080:ALA:HB2	1.95	0.48
1:A:1466:ILE:HA	1:A:1469:VAL:HG22	1.95	0.48
1:A:1503:SER:O	1:A:1507:MET:HG2	2.14	0.48
1:A:2131:LEU:HD12	1:A:2132:PRO:HD2	1.95	0.48
1:A:3133:LEU:HD12	1:A:3134:PRO:HD2	1.95	0.48
1:A:2488:ARG:O	1:A:2492:ARG:HG2	2.14	0.48
1:A:2965:ARG:HD3	1:A:2966:LYS:H	1.78	0.48
1:A:2992:PHE:CE2	1:A:2994:MET:HE3	2.48	0.48
1:A:3609:ILE:HB	1:A:3632:PRO:HG2	1.95	0.48
1:A:3831:PHE:O	1:A:3835:ILE:HD12	2.13	0.48
1:A:1336:LEU:HD11	1:A:1386:VAL:HG21	1.95	0.48
1:A:1868:TYR:HD2	1:A:1870:PHE:CD1	2.32	0.48
1:A:3635:VAL:O	1:A:3680:SER:N	2.47	0.48
1:A:2671:MET:HG2	1:A:2675:GLY:HA2	1.95	0.48
1:A:2901:TYR:OH	1:A:2909:LEU:N	2.40	0.48
1:A:4324:PRO:HB3	1:A:4638:ARG:HH11	1.79	0.48
1:A:1571:ILE:HG23	1:A:1604:LEU:HD22	1.96	0.48
1:A:1933:ASP:OD2	1:A:1962:ARG:NH1	2.47	0.48
1:A:2080:LEU:HD23	1:A:2156:LEU:HD22	1.95	0.48
1:A:2963:VAL:HB	1:A:2998:ASN:HB3	1.96	0.48
1:A:3767:ILE:O	1:A:3771:GLU:HG3	2.14	0.48
1:A:1698:ILE:HA	1:A:1701:TRP:NE1	2.28	0.47
1:A:4395:LEU:HD11	1:A:4486:ILE:HD12	1.96	0.47
1:A:2265:TYR:OH	1:A:2311:TRP:O	2.19	0.47
1:A:3588:LEU:HD23	1:A:3698:PHE:CE1	2.50	0.47
1:A:3982:PRO:HA	1:A:3985:GLN:HG2	1.96	0.47
1:A:3992:LEU:HD22	1:A:3996:PHE:HE2	1.79	0.47
1:A:1498:LYS:HA	1:A:1501:ILE:HG12	1.96	0.47
1:A:2527:PRO:HD3	1:A:2545:TRP:CE2	2.49	0.47
1:A:2879:LYS:HG3	1:A:2880:ASP:N	2.28	0.47
1:A:2382:LEU:HD23	1:A:2420:ALA:HB2	1.96	0.47
1:A:2834:GLN:HA	1:A:2837:LEU:HD13	1.95	0.47
1:A:1356:PRO:HB3	1:A:1401:ILE:HG12	1.95	0.47
1:A:1748:GLN:HE22	1:A:1872:TYR:HA	1.79	0.47
1:A:2284:LEU:HA	1:A:2287:ILE:HG12	1.97	0.47
1:A:2301:ILE:HD11	1:A:2341:ILE:HG12	1.95	0.47
1:A:2649:VAL:HG22	1:A:2702:LYS:HB3	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1964:GLU:OE1	1:A:1967:MET:N	2.38	0.47
1:A:2104:LYS:HB2	1:A:2136:ILE:HG21	1.96	0.47
1:A:2110:LYS:O	1:A:2114:GLU:HG2	2.14	0.47
1:A:2635:PHE:CZ	1:A:2650:LEU:HD22	2.49	0.47
1:A:2867:MET:HE3	1:A:2867:MET:HB3	1.69	0.47
1:A:2956:LEU:HG	1:A:2991:ALA:HB2	1.96	0.47
1:A:3865:GLN:NE2	1:A:3869:ASN:OD1	2.47	0.47
1:A:3892:LEU:HD13	1:A:3983:ILE:HG12	1.96	0.47
1:A:4401:THR:O	1:A:4405:ILE:HG12	2.15	0.47
1:A:4460:LEU:HD12	1:A:4461:PRO:HD2	1.97	0.47
1:A:4473:MET:SD	1:A:4477:GLN:HB2	2.55	0.47
1:A:2987:ASN:OD1	1:A:3061:ASN:ND2	2.47	0.47
1:A:4391:ILE:HD11	1:A:4479:VAL:HG23	1.95	0.47
1:A:1789:LEU:HD11	1:A:2055:TYR:HE2	1.80	0.47
1:A:2231:SER:HA	1:A:2234:TRP:CD1	2.50	0.47
1:A:2239:LYS:O	1:A:2242:GLU:HG3	2.14	0.47
1:A:2652:PRO:HD2	1:A:2705:ARG:HH11	1.79	0.47
1:A:2903:GLU:HG3	1:A:2904:GLU:OE1	2.15	0.47
1:A:2506:SER:OG	1:A:2507:ARG:N	2.47	0.47
1:A:2557:VAL:HG13	1:A:2754:ALA:HB2	1.97	0.47
1:A:2773:MET:HB3	1:A:2799:MET:HE3	1.97	0.47
1:A:4219:VAL:HG22	1:A:4243:LEU:HD22	1.96	0.47
1:A:4393:GLN:OE1	1:A:4393:GLN:N	2.39	0.47
1:A:1683:GLU:O	1:A:1746:GLN:NE2	2.45	0.46
1:A:3140:ARG:HA	1:A:3143:ILE:HG22	1.97	0.46
1:A:3872:ALA:O	1:A:3880:HIS:NE2	2.47	0.46
1:A:1998:THR:HG21	1:A:2005:GLN:HB3	1.97	0.46
1:A:2940:GLY:HA3	1:A:3174:ARG:HG3	1.97	0.46
1:A:3039:LYS:HA	1:A:3039:LYS:HD3	1.71	0.46
1:A:1812:ILE:HD13	1:A:2056:SER:HA	1.96	0.46
1:A:2220:LEU:O	1:A:2342:MET:HA	2.15	0.46
1:A:4324:PRO:HD3	1:A:4638:ARG:HG3	1.96	0.46
1:A:2083:GLN:HB2	1:A:2086:TYR:HD1	1.81	0.46
1:A:3618:ALA:HA	1:A:3621:LYS:NZ	2.31	0.46
1:A:3772:ASN:HA	1:A:3775:ARG:HE	1.79	0.46
1:A:4326:ASN:ND2	1:A:4579:ASN:O	2.49	0.46
1:A:1941:MET:HA	1:A:1944:ILE:HB	1.96	0.46
1:A:3591:ASP:N	1:A:3591:ASP:OD1	2.48	0.46
1:A:3601:MET:HG3	1:A:3611:ARG:HH21	1.80	0.46
1:A:1451:LEU:HG	1:A:3673:PRO:HG2	1.97	0.46
1:A:2465:ALA:HB2	1:A:2493:TYR:CD2	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2507:ARG:HE	1:A:2509:LYS:NZ	2.13	0.46
1:A:3650:ASN:OD1	1:A:3695:ARG:NH1	2.49	0.46
1:A:4609:VAL:HG23	1:A:4619:ILE:HB	1.98	0.46
1:A:3115:LEU:HD13	1:A:3143:ILE:HG21	1.97	0.46
1:A:3511:ALA:HA	1:A:3514:ILE:HG22	1.97	0.46
1:A:4528:VAL:HG11	1:A:4592:TRP:HB2	1.98	0.46
1:A:4577:LEU:HG	1:A:4630:GLU:OE1	2.15	0.46
1:A:1633:GLY:HA2	1:A:1943:ARG:NH1	2.30	0.46
1:A:1661:VAL:HG22	1:A:1676:ILE:HG21	1.98	0.46
1:A:1910:THR:HG22	1:A:2044:PRO:HD3	1.98	0.46
1:A:1942:GLY:HA3	1:A:2002:LEU:HD21	1.98	0.46
1:A:1351:TRP:H	1:A:1430:THR:HA	1.81	0.46
1:A:1630:TYR:O	1:A:1943:ARG:NE	2.34	0.46
1:A:1964:GLU:O	1:A:1968:LEU:N	2.28	0.46
1:A:2262:ASP:OD2	1:A:2263:HIS:N	2.49	0.46
1:A:2307:VAL:HA	1:A:2311:TRP:CZ2	2.51	0.46
1:A:2686:MET:SD	1:A:2703:LEU:HD11	2.56	0.46
1:A:3557:ASP:OD1	1:A:3558:GLU:N	2.49	0.46
1:A:3704:THR:HG22	1:A:3705:ARG:H	1.81	0.46
1:A:4405:ILE:O	1:A:4411:ARG:NH2	2.49	0.46
1:A:1388:ARG:HA	1:A:1391:LYS:HE2	1.98	0.45
1:A:2422:ILE:HD13	1:A:2487:GLU:HA	1.98	0.45
1:A:2584:TRP:CH2	1:A:2732:PRO:HB2	2.51	0.45
1:A:3096:ASP:OD1	1:A:3097:TRP:N	2.49	0.45
1:A:4186:PHE:O	1:A:4190:ILE:HD12	2.16	0.45
1:A:4413:PHE:CD2	1:A:4504:LEU:HD22	2.50	0.45
1:A:3567:LEU:HB2	1:A:3599:PHE:CD1	2.51	0.45
1:A:1510:SER:N	1:A:3608:LYS:HZ3	2.14	0.45
1:A:1582:VAL:HG23	1:A:1591:VAL:HG22	1.98	0.45
1:A:2577:HIS:O	1:A:2581:LEU:HD23	2.17	0.45
1:A:2804:ARG:HH12	1:A:2811:ARG:HH22	1.64	0.45
1:A:2982:ARG:NH2	1:A:2988:GLU:OE2	2.40	0.45
1:A:3174:ARG:HH12	1:A:3695:ARG:CZ	2.28	0.45
1:A:3520:PHE:HB3	1:A:3524:MET:HB3	1.98	0.45
1:A:4037:PRO:HB2	1:A:4118:PRO:HB2	1.97	0.45
1:A:4401:THR:OG1	1:A:4404:ASN:OD1	2.34	0.45
1:A:4410:PHE:O	1:A:4414:GLU:OE1	2.35	0.45
1:A:4518:GLU:HG3	1:A:4619:ILE:HG23	1.99	0.45
1:A:1507:MET:SD	1:A:3629:PHE:HE1	2.39	0.45
1:A:1881:GLN:NE2	1:A:1889:TYR:HE2	2.14	0.45
1:A:2839:GLU:N	1:A:2839:GLU:OE1	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3619:PHE:CE2	1:A:3623:LEU:HD11	2.52	0.45
1:A:2224:GLY:H	1:A:2230:LYS:HD3	1.80	0.45
1:A:1755:GLN:OE1	1:A:1922:GLN:NE2	2.50	0.45
1:A:2260:SER:OG	1:A:2262:ASP:OD2	2.28	0.45
1:A:2837:LEU:HD23	1:A:2842:GLU:HG2	1.98	0.45
1:A:3174:ARG:NH2	2:A:4704:ADP:O3A	2.49	0.45
1:A:3574:THR:O	1:A:3578:ILE:HG12	2.15	0.45
1:A:3909:LEU:HD23	1:A:4344:LEU:HA	1.98	0.45
1:A:4006:HIS:HA	1:A:4018:MET:HE1	1.98	0.45
1:A:4227:ALA:O	1:A:4230:ARG:HG3	2.17	0.45
1:A:4445:THR:O	1:A:4449:ARG:HG3	2.16	0.45
1:A:4609:VAL:HG22	1:A:4620:PHE:O	2.17	0.45
1:A:2181:GLU:HG3	1:A:2244:LEU:HB2	1.98	0.45
1:A:3043:MET:SD	1:A:3043:MET:N	2.87	0.45
1:A:2451:ARG:HG2	1:A:2455:LEU:CD1	2.46	0.45
1:A:2603:MET:HE3	2:A:4703:ADP:C5	2.52	0.45
1:A:2921:ARG:O	1:A:2925:ILE:HG12	2.16	0.45
1:A:3154:LEU:HD13	1:A:3516:TYR:HD1	1.79	0.44
1:A:4395:LEU:HD21	1:A:4486:ILE:HG23	1.99	0.44
1:A:1397:ASN:O	1:A:1401:ILE:HG13	2.17	0.44
1:A:1523:TRP:HA	1:A:1526:LYS:HG2	1.98	0.44
1:A:2210:LEU:O	1:A:2214:THR:HG23	2.17	0.44
1:A:2875:ASN:HD21	1:A:2927:ARG:NH1	2.15	0.44
1:A:4248:ALA:HB2	1:A:4269:LEU:HD12	1.99	0.44
1:A:4600:LYS:HE2	1:A:4604:VAL:HG12	2.00	0.44
1:A:2704:GLU:O	1:A:2706:ILE:HG12	2.16	0.44
1:A:2798:GLU:OE1	1:A:2836:ARG:NH2	2.50	0.44
1:A:3510:SER:HB2	1:A:3553:LEU:HD11	1.98	0.44
1:A:4391:ILE:O	1:A:4428:ARG:NH2	2.50	0.44
1:A:1868:TYR:HB3	1:A:1870:PHE:CD1	2.52	0.44
1:A:4460:LEU:HA	1:A:4475:VAL:HG22	2.00	0.44
1:A:2506:SER:OG	1:A:2510:MET:HB3	2.18	0.44
1:A:2516:GLU:O	1:A:2519:ARG:HG2	2.17	0.44
1:A:3596:ALA:HB2	1:A:3701:PHE:CE2	2.52	0.44
1:A:3906:GLN:OE1	1:A:3910:ARG:HG3	2.17	0.44
1:A:4071:ILE:HG13	1:A:4099:VAL:HG12	2.00	0.44
1:A:1727:PHE:HE2	1:A:1741:TRP:CG	2.36	0.44
1:A:1863:ASN:OD1	1:A:1894:GLN:NE2	2.39	0.44
1:A:1888:CYS:O	1:A:1892:MET:HG2	2.17	0.44
1:A:2231:SER:HA	1:A:2234:TRP:NE1	2.32	0.44
1:A:2527:PRO:HD3	1:A:2545:TRP:CD1	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2744:LEU:O	1:A:2747:ILE:HG22	2.18	0.44
1:A:2874:SER:HB2	1:A:2920:LEU:HD11	2.00	0.44
1:A:3114:ASP:O	1:A:3140:ARG:NH2	2.51	0.44
1:A:3612:THR:O	1:A:3635:VAL:HA	2.18	0.44
1:A:3720:GLU:OE2	1:A:3855:ARG:HD3	2.17	0.44
1:A:4635:PHE:CD2	1:A:4640:VAL:HG11	2.53	0.44
1:A:1374:PRO:HD2	1:A:1377:LEU:HD12	2.00	0.44
1:A:1608:LEU:O	1:A:1611:ILE:HG22	2.18	0.44
1:A:2253:ILE:HG21	1:A:2689:HIS:CE1	2.53	0.44
1:A:3626:ALA:HA	1:A:3631:ASN:OD1	2.17	0.44
1:A:4481:ASP:OD2	1:A:4485:ARG:NE	2.36	0.44
1:A:2686:MET:HE1	1:A:2708:PHE:CZ	2.53	0.43
1:A:3109:PHE:HD2	1:A:3180:ILE:HG21	1.83	0.43
1:A:3818:LEU:HA	1:A:4346:MET:CE	2.45	0.43
1:A:3973:LEU:HB2	1:A:3992:LEU:HD11	1.99	0.43
1:A:2094:LYS:HD3	2:A:4701:ADP:O2'	2.18	0.43
1:A:2368:VAL:HG12	1:A:2369:LEU:HD22	2.00	0.43
1:A:4332:LEU:HD23	1:A:4332:LEU:HA	1.85	0.43
1:A:1536:VAL:HG12	1:A:1601:LEU:HG	2.00	0.43
1:A:1626:PHE:CE2	1:A:1628:ARG:HB2	2.54	0.43
1:A:2146:VAL:HA	1:A:2149:LEU:HD23	1.99	0.43
1:A:3689:PRO:HB2	1:A:3691:ASP:OD1	2.18	0.43
1:A:1413:TRP:O	1:A:1417:MET:HG2	2.18	0.43
1:A:1491:ASP:OD1	1:A:1495:ASN:ND2	2.48	0.43
1:A:1504:VAL:HA	1:A:1507:MET:CG	2.48	0.43
1:A:1714:ALA:HA	1:A:1870:PHE:CE2	2.49	0.43
1:A:2306:ASP:HB2	1:A:2676:THR:HG21	1.99	0.43
1:A:4393:GLN:HG2	1:A:4394:THR:N	2.33	0.43
1:A:1349:GLN:NE2	1:A:1353:SER:O	2.52	0.43
1:A:1678:SER:HB2	1:A:1872:TYR:HE2	1.84	0.43
1:A:2893:VAL:HG11	1:A:2916:LEU:HD13	2.01	0.43
1:A:3886:LEU:O	1:A:3890:ILE:HG12	2.19	0.43
1:A:3916:LEU:HD23	1:A:3916:LEU:HA	1.88	0.43
1:A:4172:SER:O	1:A:4176:ARG:NH1	2.50	0.43
1:A:2110:LYS:HA	1:A:2113:ARG:CZ	2.48	0.43
1:A:2206:LYS:HB3	1:A:2364:PHE:CE2	2.53	0.43
1:A:2435:LYS:O	1:A:2438:GLU:HG3	2.18	0.43
1:A:2465:ALA:HB2	1:A:2493:TYR:CE2	2.54	0.43
1:A:2590:PRO:HG2	1:A:2687:VAL:HG21	2.00	0.43
1:A:2241:LEU:HB3	1:A:2298:ARG:NH2	2.34	0.43
1:A:3202:ASN:O	1:A:3206:ARG:HG3	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3576:ASN:CB	1:A:3701:PHE:HE1	2.31	0.43
1:A:3888:ALA:HB1	1:A:4012:ASN:HD22	1.83	0.43
1:A:4050:ASP:OD1	1:A:4051:ALA:N	2.49	0.43
1:A:4423:LEU:HD21	1:A:4466:HIS:ND1	2.33	0.43
1:A:1914:GLU:OE1	2:A:4701:ADP:H3'	2.19	0.43
1:A:2354:ALA:HB1	1:A:2358:ARG:HH21	1.83	0.43
1:A:2995:ASP:OD1	1:A:3067:THR:OG1	2.35	0.43
1:A:3030:MET:SD	1:A:3050:LEU:HD11	2.59	0.43
1:A:3723:ASP:O	1:A:3726:GLU:HG3	2.17	0.43
1:A:1671:SER:O	1:A:1692:ILE:HG22	2.19	0.43
1:A:2309:PRO:HB3	1:A:2352:THR:HG23	2.01	0.43
1:A:2522:THR:OG1	1:A:2524:VAL:HG12	2.19	0.43
1:A:2727:PHE:O	1:A:2731:VAL:HG22	2.18	0.43
1:A:4109:LEU:HD23	1:A:4113:LEU:HD23	2.01	0.43
1:A:1367:LEU:HD11	1:A:1394:MET:SD	2.58	0.42
1:A:1412:HIS:CE1	1:A:1453:ALA:HA	2.54	0.42
1:A:1587:LEU:HD23	1:A:1589:MET:H	1.83	0.42
1:A:2841:GLU:CD	1:A:2844:ARG:HH21	2.22	0.42
1:A:2985:CYS:SG	1:A:3032:GLN:HB3	2.58	0.42
1:A:3650:ASN:HB3	1:A:3652:GLU:HG2	1.99	0.42
1:A:1467:ARG:HA	1:A:1523:TRP:CH2	2.55	0.42
1:A:2309:PRO:HA	1:A:2312:VAL:HG12	2.01	0.42
1:A:3169:MET:HB3	1:A:3693:CYS:SG	2.60	0.42
1:A:1882:THR:HG23	1:A:1885:THR:H	1.84	0.42
1:A:1940:ALA:HB1	1:A:1943:ARG:CZ	2.49	0.42
1:A:1961:ASN:ND2	1:A:2019:ASN:O	2.51	0.42
1:A:2885:ASP:HB3	1:A:2888:GLU:OE1	2.19	0.42
1:A:3130:TYR:CZ	1:A:3132:LYS:HB2	2.54	0.42
1:A:3999:ASP:OD1	1:A:4000:ARG:HG2	2.19	0.42
1:A:1626:PHE:HB3	1:A:1629:PHE:CD2	2.54	0.42
1:A:1629:PHE:HE1	1:A:1640:ILE:HG21	1.84	0.42
1:A:2666:ILE:HB	1:A:2712:CYS:SG	2.59	0.42
1:A:1608:LEU:HA	1:A:1611:ILE:HG22	2.01	0.42
1:A:1931:ASN:O	1:A:1936:PHE:HD1	2.03	0.42
1:A:2138:ILE:HG13	1:A:2161:LEU:HD21	2.01	0.42
1:A:2863:ARG:NH2	1:A:2864:GLU:OE2	2.52	0.42
1:A:3930:GLU:HG2	1:A:3931:GLN:N	2.34	0.42
1:A:2823:ARG:HH12	1:A:2868:SER:N	2.18	0.42
1:A:3211:THR:HG21	1:A:3753:LEU:HD21	2.01	0.42
1:A:3840:LEU:HD23	1:A:3840:LEU:HA	1.85	0.42
1:A:1983:ARG:HB3	1:A:1983:ARG:NH1	2.35	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2138:ILE:HA	1:A:2141:VAL:HG12	2.01	0.42
1:A:2412:MET:O	1:A:2416:GLN:HG2	2.19	0.42
1:A:2779:MET:HA	1:A:2782:GLU:HG3	2.02	0.42
1:A:3150:VAL:HG13	1:A:3532:TRP:CE2	2.54	0.42
1:A:3780:VAL:O	1:A:3784:VAL:HG23	2.20	0.42
1:A:3782:ARG:O	1:A:3786:GLU:HG2	2.19	0.42
1:A:3814:THR:O	1:A:3818:LEU:HG	2.20	0.42
1:A:2486:LEU:O	1:A:2490:ILE:HG12	2.20	0.42
1:A:2962:LYS:HE3	1:A:3663:THR:HG21	2.00	0.42
1:A:3146:SER:O	1:A:3150:VAL:HG23	2.20	0.42
1:A:3596:ALA:HB2	1:A:3701:PHE:CD2	2.55	0.42
1:A:3736:GLY:O	1:A:3740:LEU:N	2.40	0.42
1:A:4173:PRO:HB2	1:A:4175:GLU:OE1	2.20	0.42
1:A:4294:ILE:HD11	1:A:4320:TRP:NE1	2.35	0.42
1:A:4623:ASP:OD2	1:A:4624:PHE:N	2.53	0.42
1:A:1539:ASP:HA	1:A:1542:ARG:HD3	2.00	0.42
1:A:3133:LEU:HD11	1:A:3141:GLU:HB3	2.01	0.42
1:A:3212:VAL:HA	1:A:3215:VAL:HG12	2.02	0.42
1:A:3704:THR:HG22	1:A:3705:ARG:N	2.35	0.42
1:A:1623:ARG:HB3	1:A:1630:TYR:CZ	2.55	0.41
1:A:2460:SER:OG	1:A:2589:LYS:HD2	2.20	0.41
1:A:3209:LYS:HE2	1:A:3486:ARG:NH2	2.34	0.41
1:A:2278:GLY:N	1:A:2281:THR:OG1	2.52	0.41
1:A:2387:LEU:HD21	1:A:2463:HIS:ND1	2.35	0.41
1:A:4027:LEU:HD21	1:A:4043:MET:HE2	2.02	0.41
1:A:4461:PRO:HG2	1:A:4464:TRP:CE3	2.55	0.41
1:A:4607:LEU:HD22	1:A:4640:VAL:HG13	2.02	0.41
1:A:2205:GLU:O	1:A:2209:GLN:HG3	2.19	0.41
1:A:2211:TYR:CE1	1:A:2241:LEU:HD21	2.54	0.41
1:A:3178:ASP:OD2	1:A:3585:ARG:NE	2.52	0.41
1:A:4107:MET:O	1:A:4110:GLU:HG2	2.21	0.41
1:A:1678:SER:OG	1:A:1679:ARG:N	2.53	0.41
1:A:2723:LEU:HD23	1:A:2723:LEU:HA	1.84	0.41
1:A:3470:ALA:O	1:A:3474:ARG:HG3	2.20	0.41
1:A:1464:LYS:HE2	1:A:1464:LYS:HB2	1.89	0.41
1:A:2269:ASP:O	1:A:2273:ARG:NH2	2.54	0.41
1:A:2684:ARG:O	1:A:2688:GLU:HG3	2.20	0.41
1:A:3209:LYS:HB2	1:A:3486:ARG:NH2	2.35	0.41
1:A:4260:PHE:CE2	1:A:4608:PRO:HB3	2.56	0.41
1:A:1650:LEU:HD23	1:A:1650:LEU:HA	1.90	0.41
1:A:2729:ARG:HE	1:A:2730:HIS:CD2	2.38	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2832:LEU:HD23	1:A:2832:LEU:HA	1.92	0.41
1:A:2884:VAL:HG21	1:A:2889:LEU:HD12	2.01	0.41
1:A:4038:ASN:HB3	1:A:4118:PRO:HG2	2.02	0.41
1:A:4554:ASP:N	1:A:4557:SER:OG	2.53	0.41
1:A:1431:LEU:HD21	1:A:1435:TRP:CZ2	2.56	0.41
1:A:1940:ALA:HB1	1:A:1943:ARG:NH2	2.35	0.41
1:A:1980:GLU:O	1:A:1984:GLU:HG3	2.21	0.41
1:A:2094:LYS:HE2	1:A:2094:LYS:HB3	1.80	0.41
1:A:2413:LEU:HD13	1:A:2416:GLN:NE2	2.35	0.41
1:A:2457:SER:OG	1:A:2584:TRP:HZ2	2.01	0.41
1:A:3017:VAL:O	1:A:3020:LEU:HD22	2.21	0.41
1:A:4277:SER:HA	1:A:4282:PHE:CD2	2.56	0.41
1:A:1661:VAL:HG13	1:A:1676:ILE:HG23	2.02	0.41
1:A:1788:THR:O	1:A:1792:LEU:HD23	2.21	0.41
1:A:1973:GLN:HA	1:A:1976:GLN:HE21	1.86	0.41
1:A:3042:LEU:O	1:A:3044:LEU:HG	2.20	0.41
1:A:3167:ARG:NH2	1:A:3685:THR:HA	2.36	0.41
1:A:1470:TRP:CE3	1:A:1470:TRP:HA	2.56	0.41
1:A:1786:GLU:OE2	1:A:1790:ASN:ND2	2.54	0.41
1:A:2054:LEU:HG	1:A:2097:LEU:HD12	2.03	0.41
1:A:2066:ALA:HA	1:A:2069:ILE:HG22	2.02	0.41
1:A:2253:ILE:HG21	1:A:2689:HIS:NE2	2.36	0.41
1:A:2265:TYR:OH	1:A:2315:LEU:HG	2.21	0.41
1:A:2335:LEU:HD23	1:A:2336:PRO:O	2.21	0.41
1:A:2873:TYR:HB3	1:A:2881:TYR:CE2	2.56	0.41
1:A:2876:TRP:HA	1:A:2876:TRP:CE3	2.56	0.41
1:A:2909:LEU:HA	2:A:4704:ADP:C2	2.56	0.41
1:A:2927:ARG:HG3	1:A:2927:ARG:O	2.21	0.41
1:A:2930:GLN:HG3	1:A:2932:HIS:CD2	2.55	0.41
1:A:3481:SER:HB2	1:A:3770:LEU:CD1	2.51	0.41
1:A:4400:ARG:HB3	1:A:4405:ILE:HD11	2.03	0.41
1:A:4404:ASN:ND2	1:A:4501:ALA:HB2	2.36	0.41
1:A:1351:TRP:CE3	1:A:1434:ILE:HD12	2.56	0.41
1:A:1931:ASN:O	1:A:1936:PHE:CD1	2.74	0.41
1:A:2009:SER:O	1:A:2012:MET:HG2	2.21	0.41
1:A:2395:GLN:HB3	1:A:2398:ARG:NH2	2.36	0.41
1:A:2591:LEU:H	1:A:2709:VAL:HG12	1.86	0.41
1:A:2916:LEU:HD12	1:A:2916:LEU:HA	1.91	0.41
1:A:3045:ASP:OD1	1:A:3046:SER:N	2.53	0.41
1:A:3924:ILE:HG23	1:A:3952:GLN:OE1	2.21	0.41
1:A:2206:LYS:HD3	1:A:2206:LYS:HA	1.89	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2646:ASN:OD1	1:A:2647:GLY:N	2.54	0.40
1:A:2935:LEU:HD23	1:A:3092:ASN:HB3	2.03	0.40
1:A:3174:ARG:HD2	1:A:3694:SER:OG	2.21	0.40
1:A:3811:ILE:HD11	1:A:3864:PHE:CE1	2.55	0.40
1:A:1344:ASP:O	1:A:1348:GLU:HG2	2.21	0.40
1:A:2093:LEU:O	1:A:2097:LEU:HD23	2.22	0.40
1:A:2816:LEU:HD11	1:A:2820:GLY:HA3	2.04	0.40
1:A:4300:ILE:N	1:A:4304:GLU:OE2	2.45	0.40
1:A:1627:PRO:HB3	1:A:1950:GLN:HB3	2.02	0.40
1:A:2224:GLY:N	1:A:2230:LYS:HD3	2.36	0.40
1:A:2789:GLN:HB2	1:A:2792:TYR:HE1	1.87	0.40
1:A:2888:GLU:OE1	1:A:2888:GLU:N	2.50	0.40
1:A:3627:LEU:HD21	1:A:3648:VAL:HG22	2.03	0.40
1:A:3749:LEU:HD13	1:A:3773:LEU:HD22	2.02	0.40
1:A:3835:ILE:HG23	1:A:3866:VAL:HG12	2.04	0.40
1:A:1477:LEU:HB3	1:A:1485:ARG:HG2	2.04	0.40
1:A:1739:ILE:HD13	1:A:1739:ILE:HA	1.91	0.40
1:A:2315:LEU:HA	1:A:2318:VAL:HG22	2.02	0.40
1:A:3209:LYS:CA	1:A:3486:ARG:HH12	2.33	0.40
1:A:3772:ASN:O	1:A:3775:ARG:HG2	2.21	0.40
1:A:4277:SER:HA	1:A:4282:PHE:CG	2.56	0.40
1:A:1523:TRP:CE3	1:A:1526:LYS:HD2	2.56	0.40
1:A:2412:MET:HE1	1:A:2467:ARG:HA	2.03	0.40
1:A:2877:LEU:HD12	1:A:2884:VAL:HB	2.02	0.40
1:A:3746:GLU:HA	1:A:3773:LEU:HD21	2.04	0.40
1:A:4186:PHE:CE1	1:A:4190:ILE:HD11	2.57	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	3035/4646 (65%)	2956 (97%)	78 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1511	PRO

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	2706/4125 (66%)	2703 (100%)	3 (0%)	92	96

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1567	ARG
1	A	1699	ASN
1	A	3112	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1755	GLN
1	A	1922	GLN
1	A	2416	GLN
1	A	2439	HIS
1	A	2442	GLN
1	A	3865	GLN
1	A	3869	ASN
1	A	4156	ASN
1	A	4191	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

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	-	24,29,29	0.87	0	29,45,45	1.26	3 (10%)
2	ADP	A	4703	-	24,29,29	0.87	0	29,45,45	1.29	3 (10%)
2	ADP	A	4704	-	24,29,29	0.85	0	29,45,45	1.24	2 (6%)
3	ATP	A	4702	4	28,33,33	0.75	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
2	ADP	A	4701	-	-	3/12/32/32	0/3/3/3
2	ADP	A	4703	-	-	5/12/32/32	0/3/3/3
2	ADP	A	4704	-	-	2/12/32/32	0/3/3/3
3	ATP	A	4702	4	-	5/18/38/38	0/3/3/3

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	4703	ADP	N3-C2-N1	-3.62	123.76	128.67
2	A	4704	ADP	N3-C2-N1	-3.57	123.83	128.67
2	A	4701	ADP	N3-C2-N1	-3.54	123.86	128.67
2	A	4704	ADP	C4-C5-N7	-2.53	106.67	109.34
2	A	4701	ADP	C4-C5-N7	-2.48	106.72	109.34
2	A	4703	ADP	C4-C5-N7	-2.45	106.75	109.34
3	A	4702	ATP	C5-C6-N6	2.41	123.98	120.31
2	A	4701	ADP	C4'-O4'-C1'	2.34	112.07	109.92
2	A	4703	ADP	C4'-O4'-C1'	2.26	112.00	109.92

There are no chirality outliers.

All (15) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	4703	ADP	C5'-O5'-PA-O1A
2	A	4703	ADP	C5'-O5'-PA-O3A
2	A	4704	ADP	C5'-O5'-PA-O2A
2	A	4704	ADP	C5'-O5'-PA-O3A
3	A	4702	ATP	PB-O3B-PG-O3G
2	A	4703	ADP	O4'-C4'-C5'-O5'
2	A	4703	ADP	C3'-C4'-C5'-O5'
3	A	4702	ATP	PB-O3B-PG-O1G
3	A	4702	ATP	O4'-C4'-C5'-O5'
2	A	4701	ADP	PB-O3A-PA-O2A
3	A	4702	ATP	PA-O3A-PB-O1B
3	A	4702	ATP	C3'-C4'-C5'-O5'
2	A	4703	ADP	C5'-O5'-PA-O2A
2	A	4701	ADP	O4'-C4'-C5'-O5'
2	A	4701	ADP	PB-O3A-PA-O1A

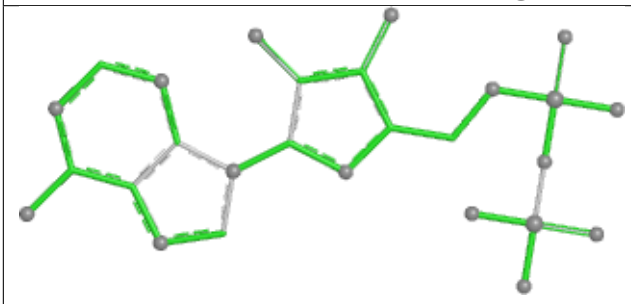
There are no ring outliers.

4 monomers are involved in 10 short contacts:

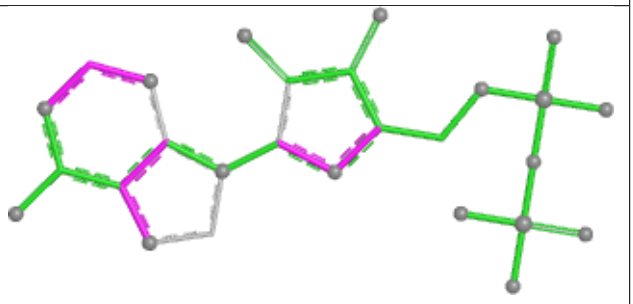
Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	4701	ADP	3	0
2	A	4703	ADP	3	0
2	A	4704	ADP	3	0
3	A	4702	ATP	1	0

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.

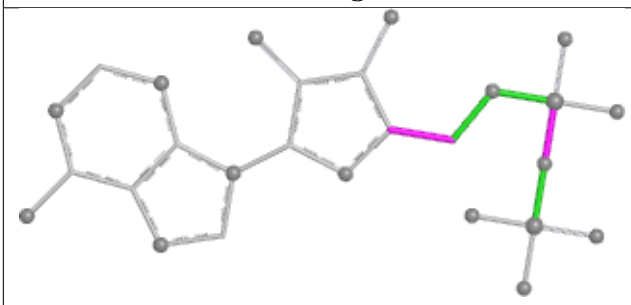
Ligand ADP A 4701



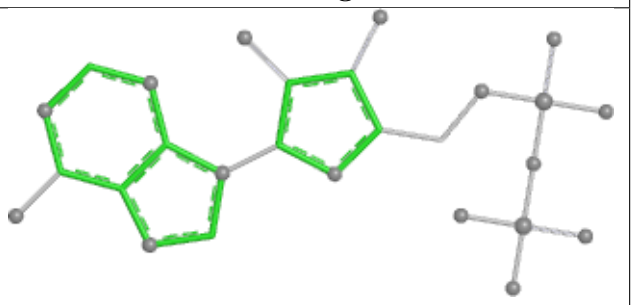
Bond lengths



Bond angles

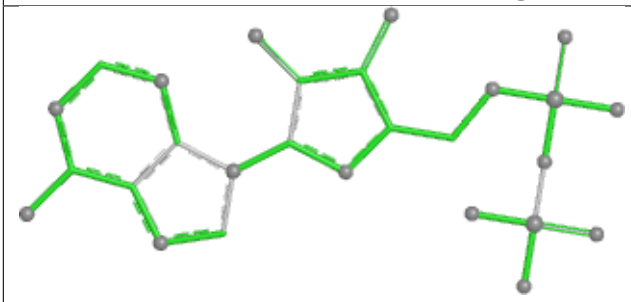


Torsions

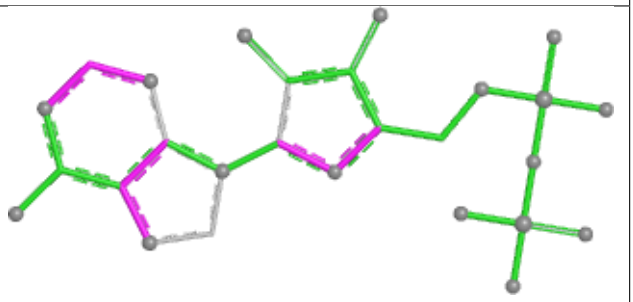


Rings

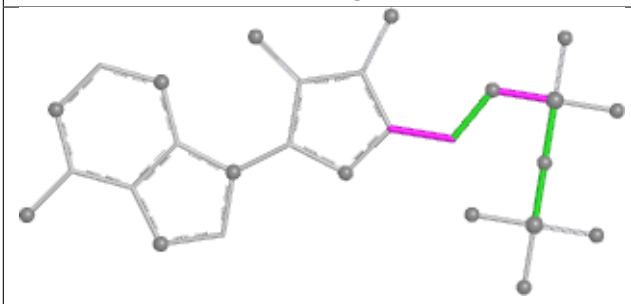
Ligand ADP A 4703



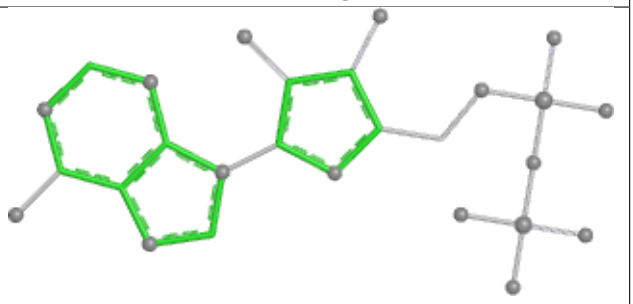
Bond lengths



Bond angles

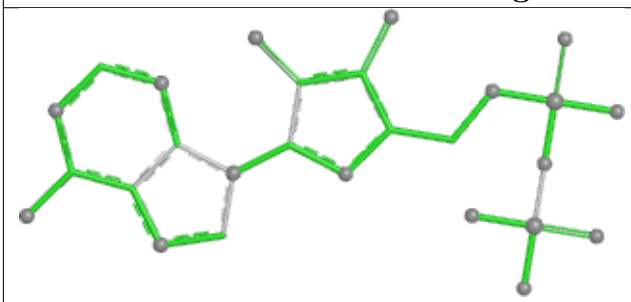


Torsions

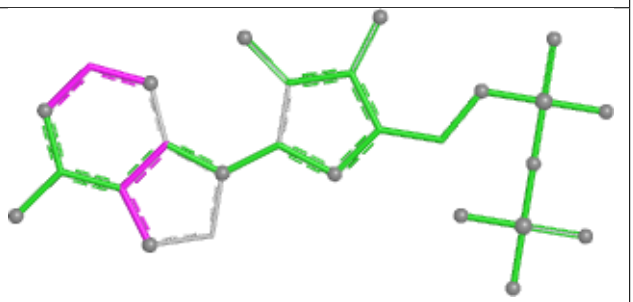


Rings

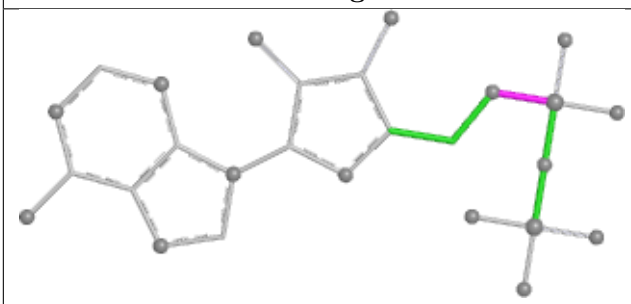
Ligand ADP A 4704



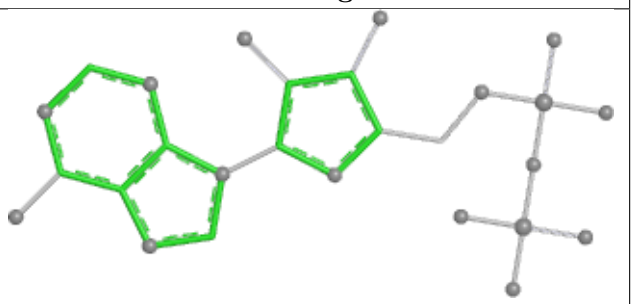
Bond lengths



Bond angles

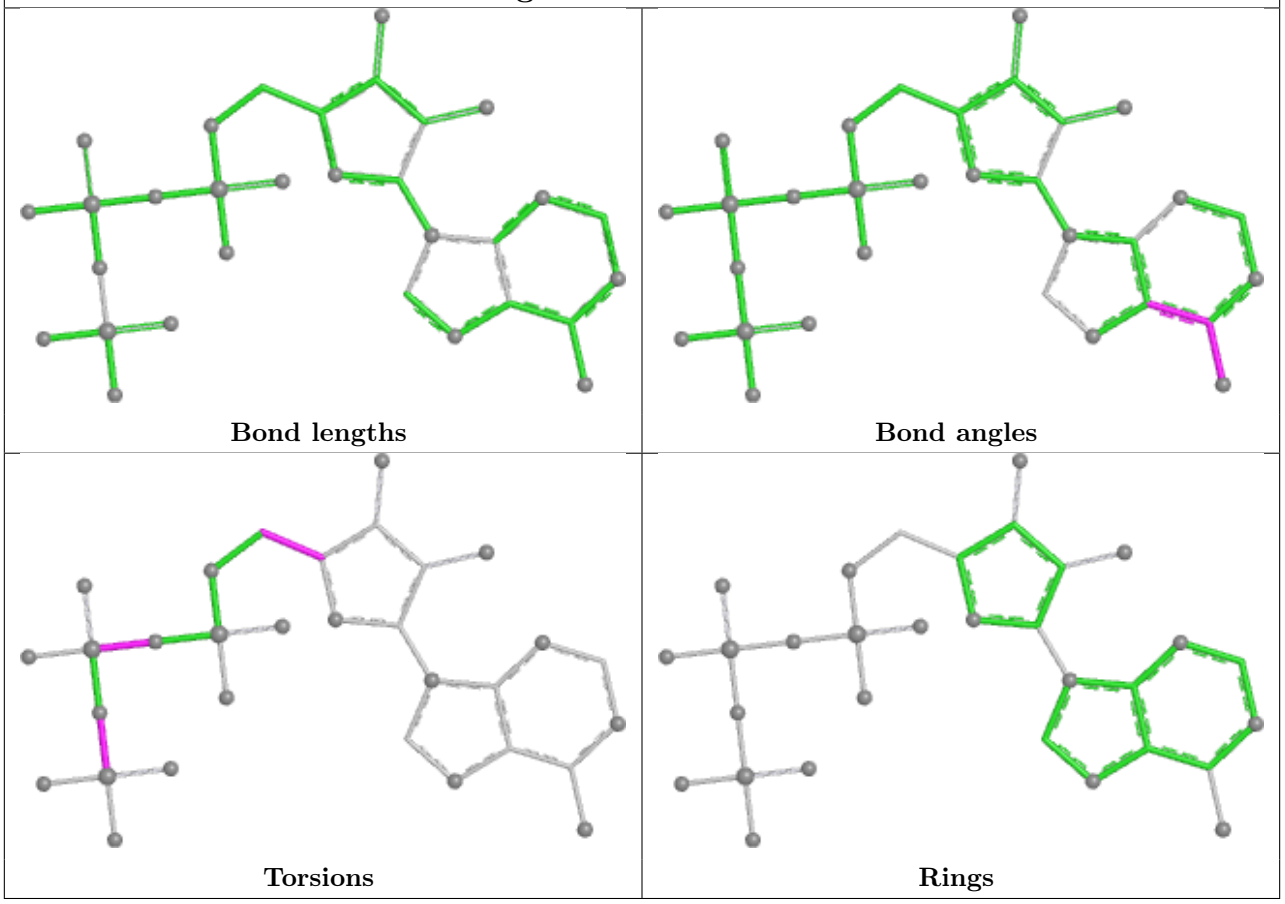


Torsions



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.

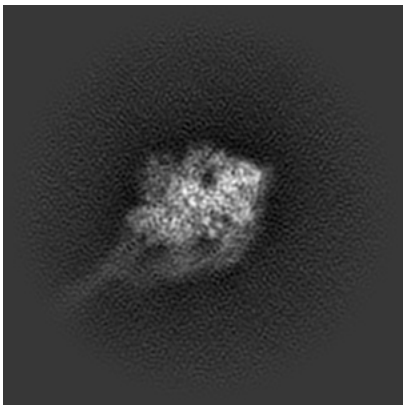
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-44712. These allow visual inspection of the internal detail of the map and identification of artifacts.

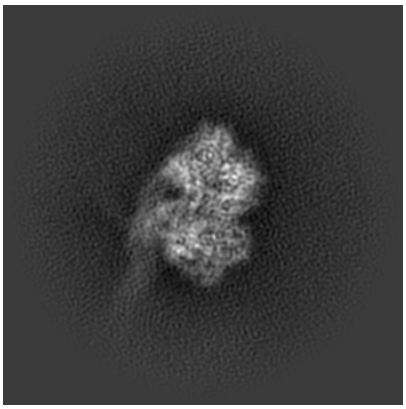
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

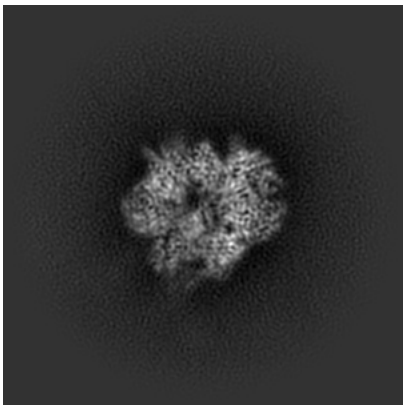
6.1.1 Primary map



X

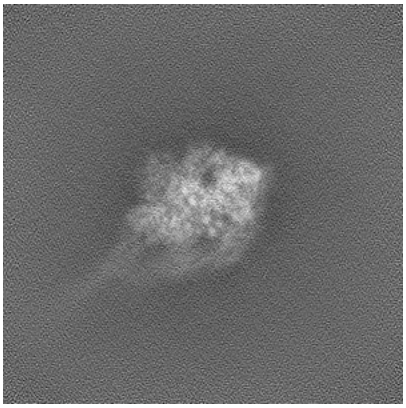


Y

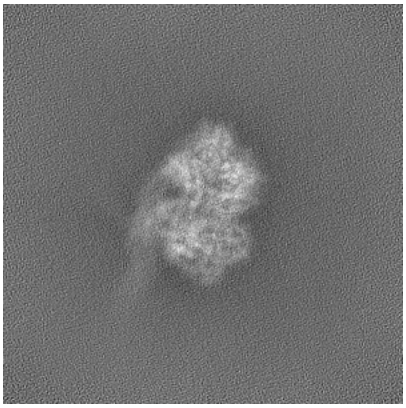


Z

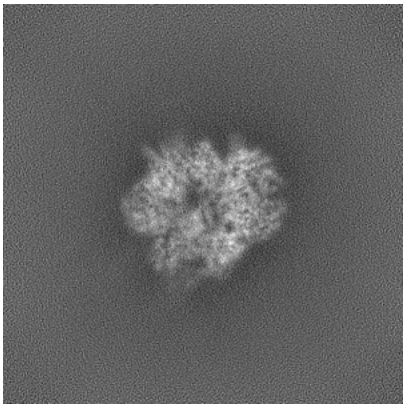
6.1.2 Raw map



X



Y

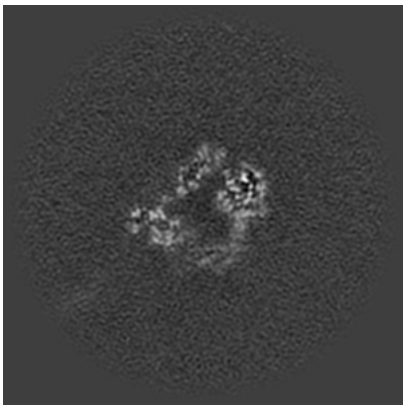


Z

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

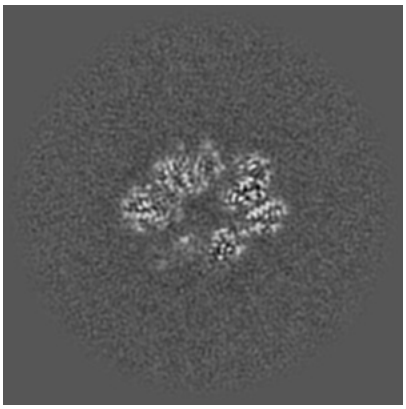
6.2 Central slices (i)

6.2.1 Primary map



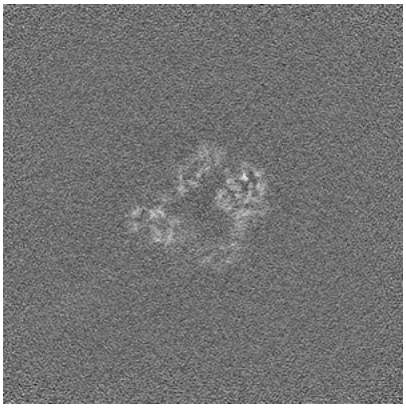
X Index: 160

Y Index: 160

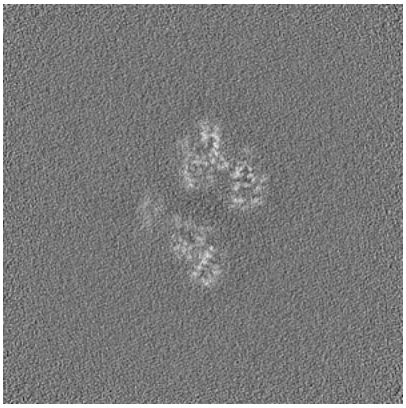


Z Index: 160

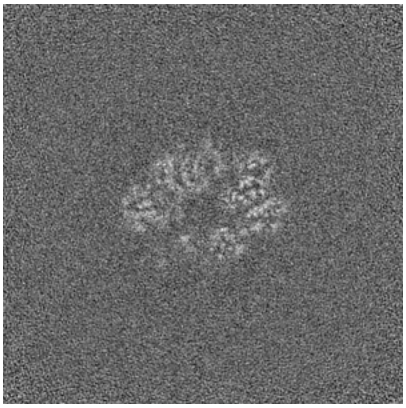
6.2.2 Raw map



X Index: 160



Y Index: 160

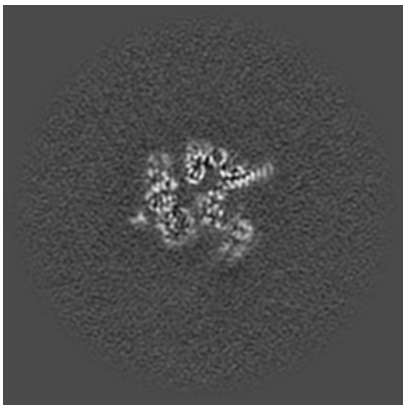


Z Index: 160

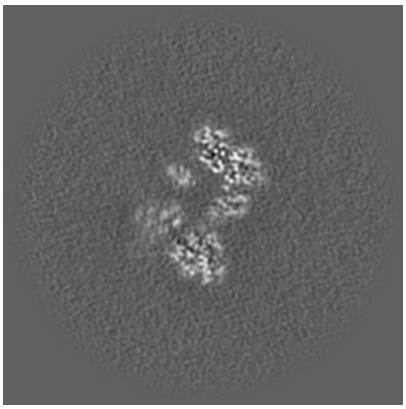
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

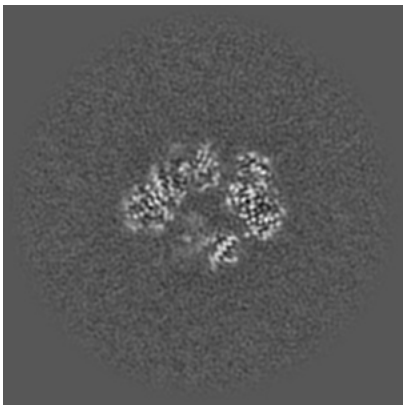
6.3.1 Primary map



X Index: 182

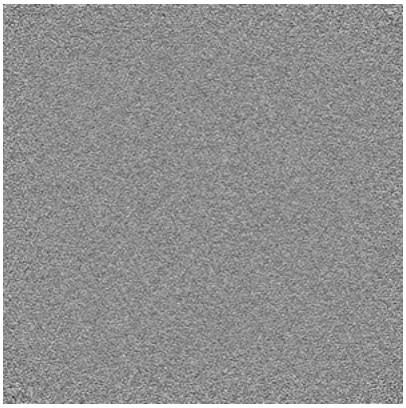


Y Index: 150

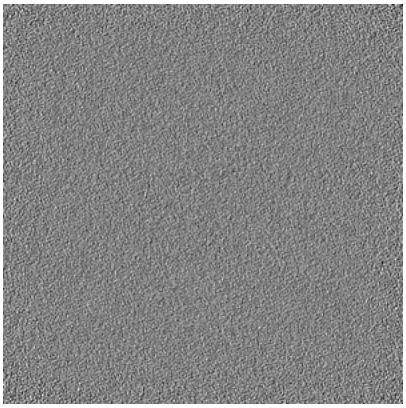


Z Index: 165

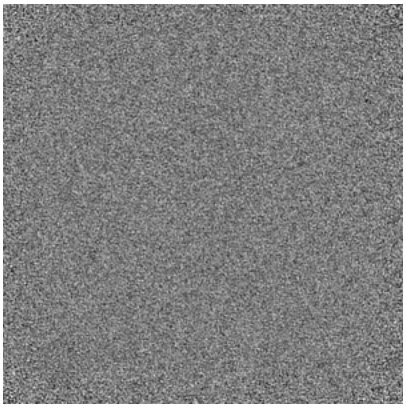
6.3.2 Raw map



X Index: 0



Y Index: 0

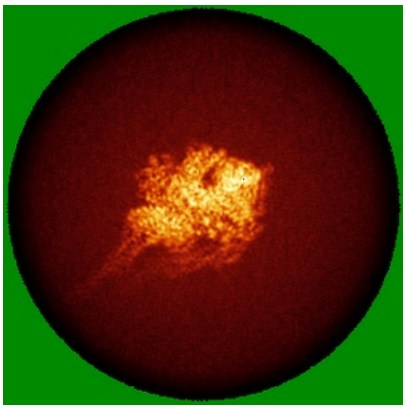


Z Index: 0

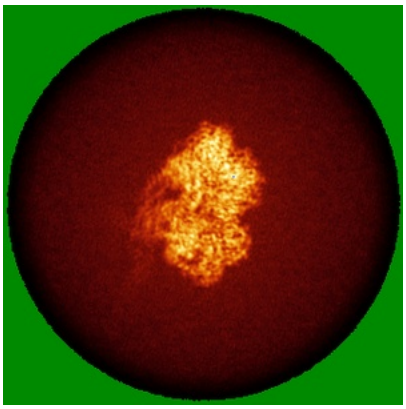
The images above show the largest variance slices of the map in three orthogonal directions.

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

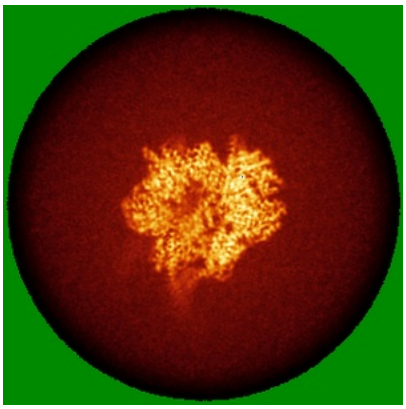
6.4.1 Primary map



X

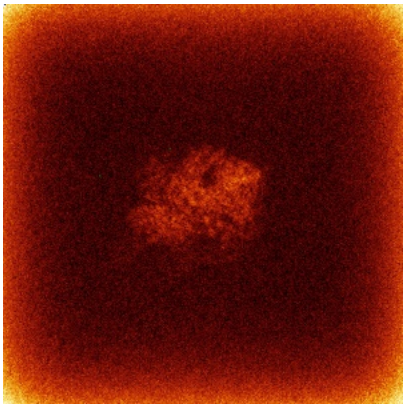


Y

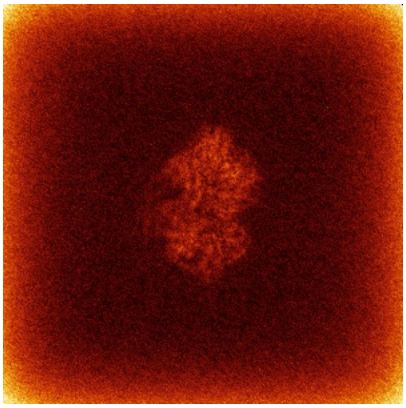


Z

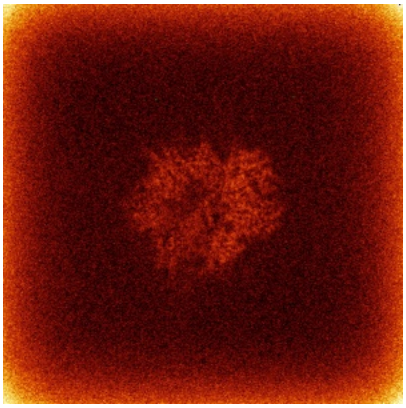
6.4.2 Raw map



X



Y

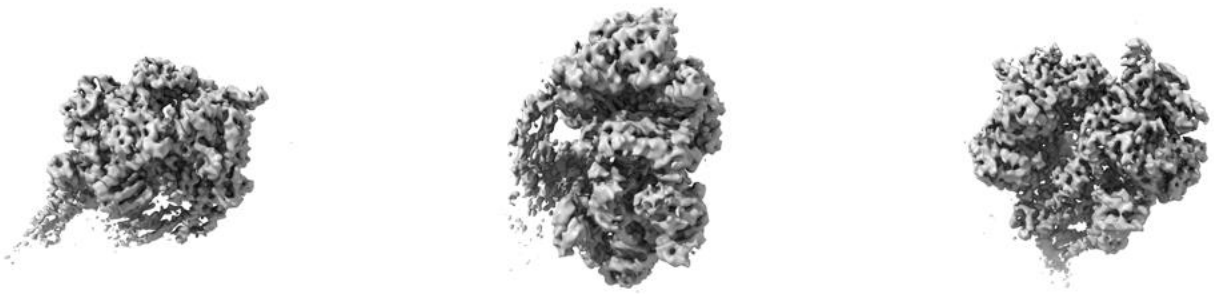


Z

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)

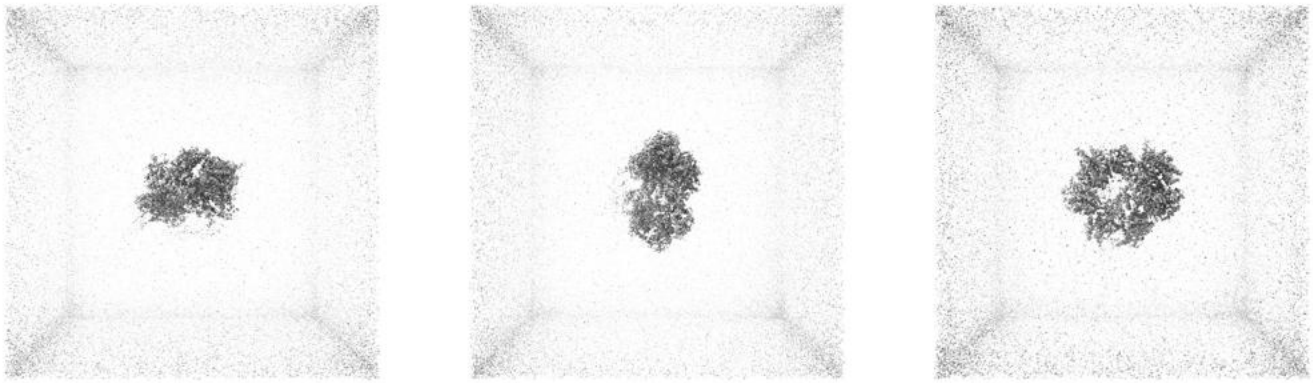
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

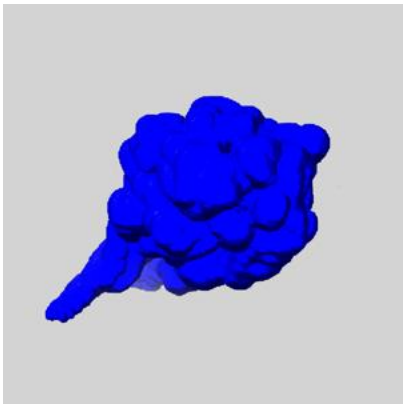
6.6 Mask visualisation (i)

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

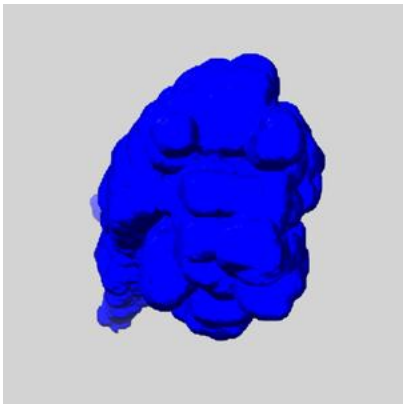
A mask typically either:

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

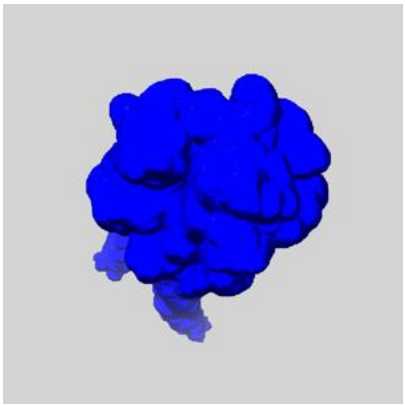
6.6.1 emd_44712_msk_1.map (i)



X



Y

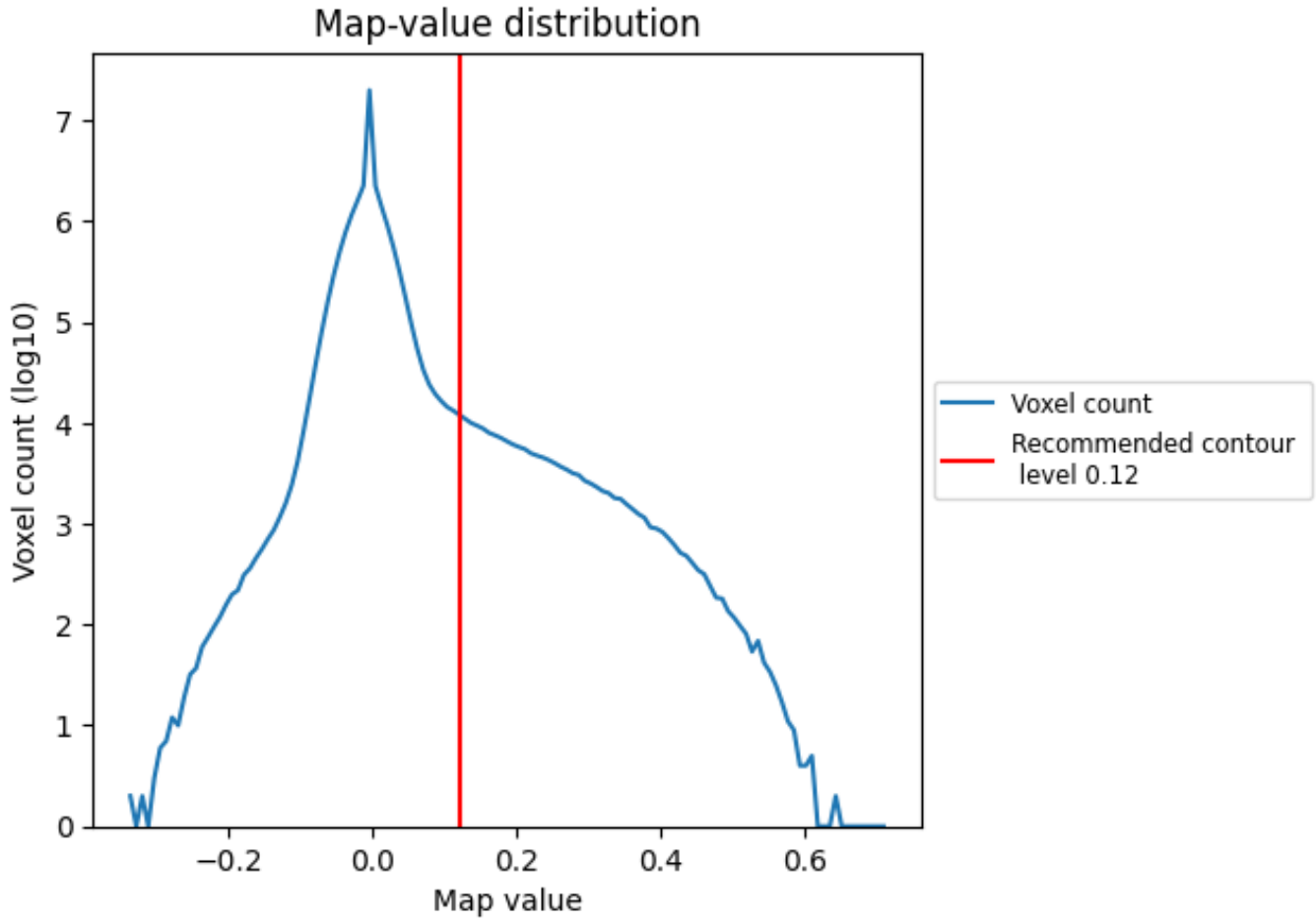


Z

7 Map analysis

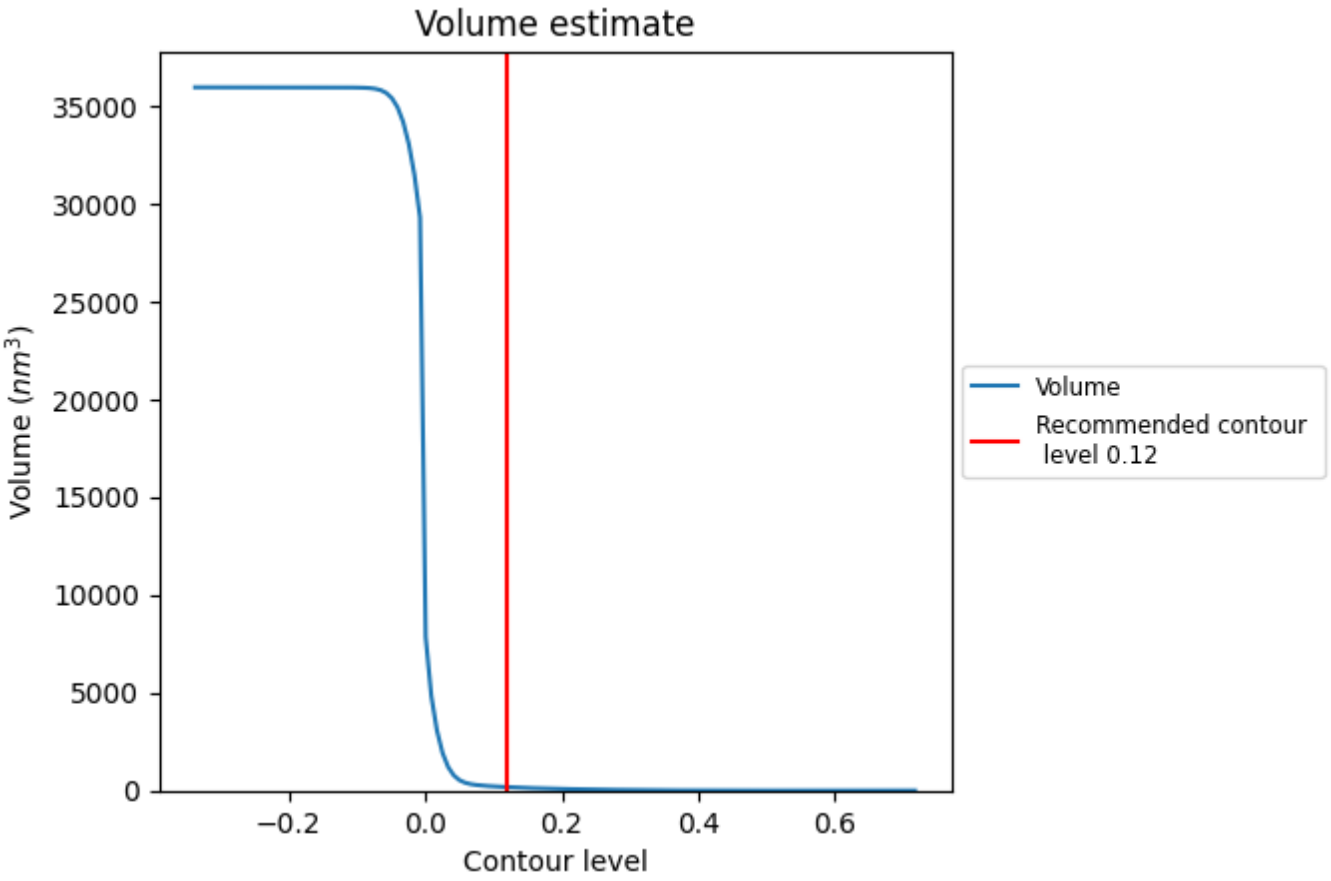
This section contains the results of statistical analysis of the map.

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.

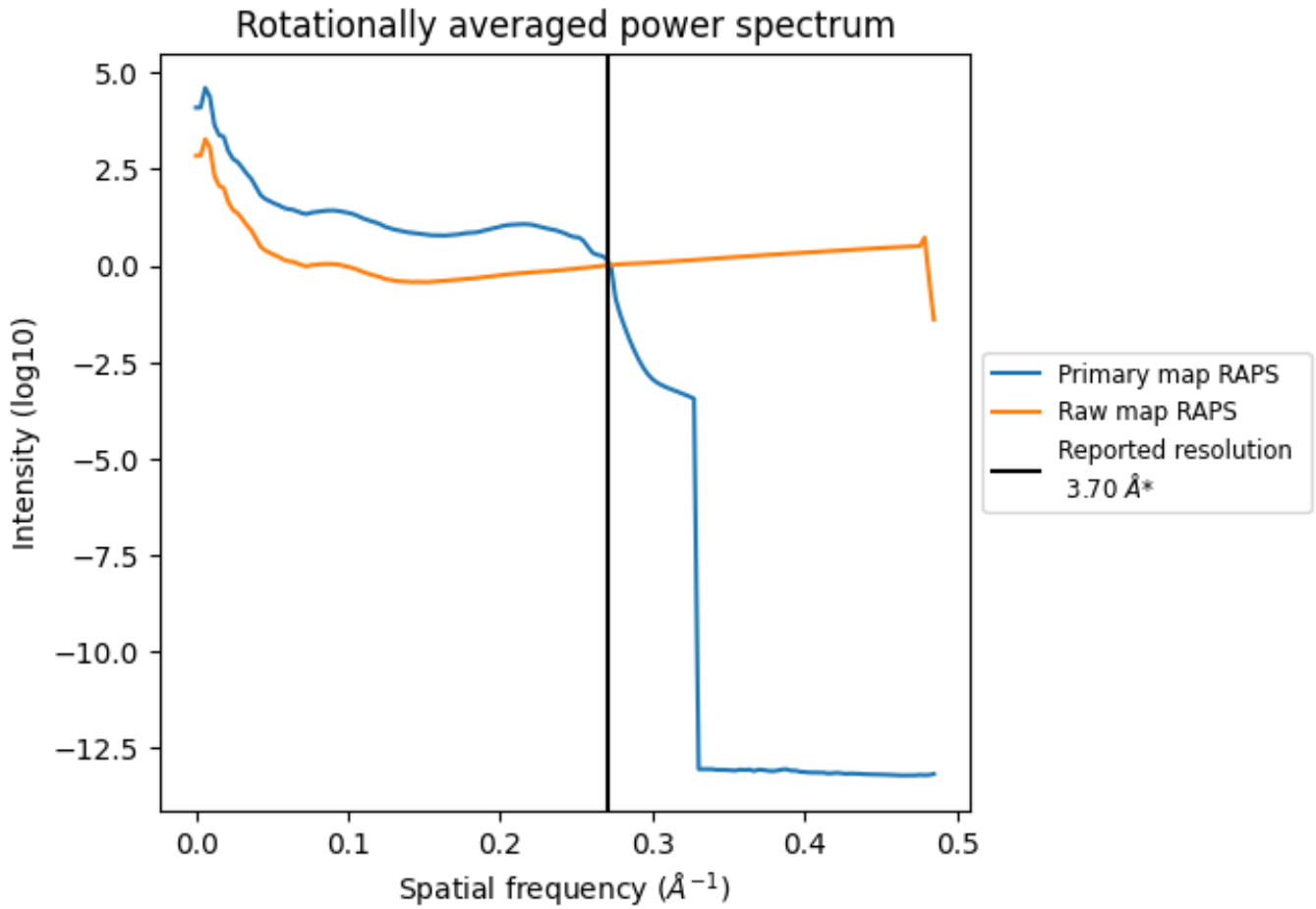
7.2 Volume estimate



The volume at the recommended contour level is 177 nm^3; this corresponds to an approximate mass of 159 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)

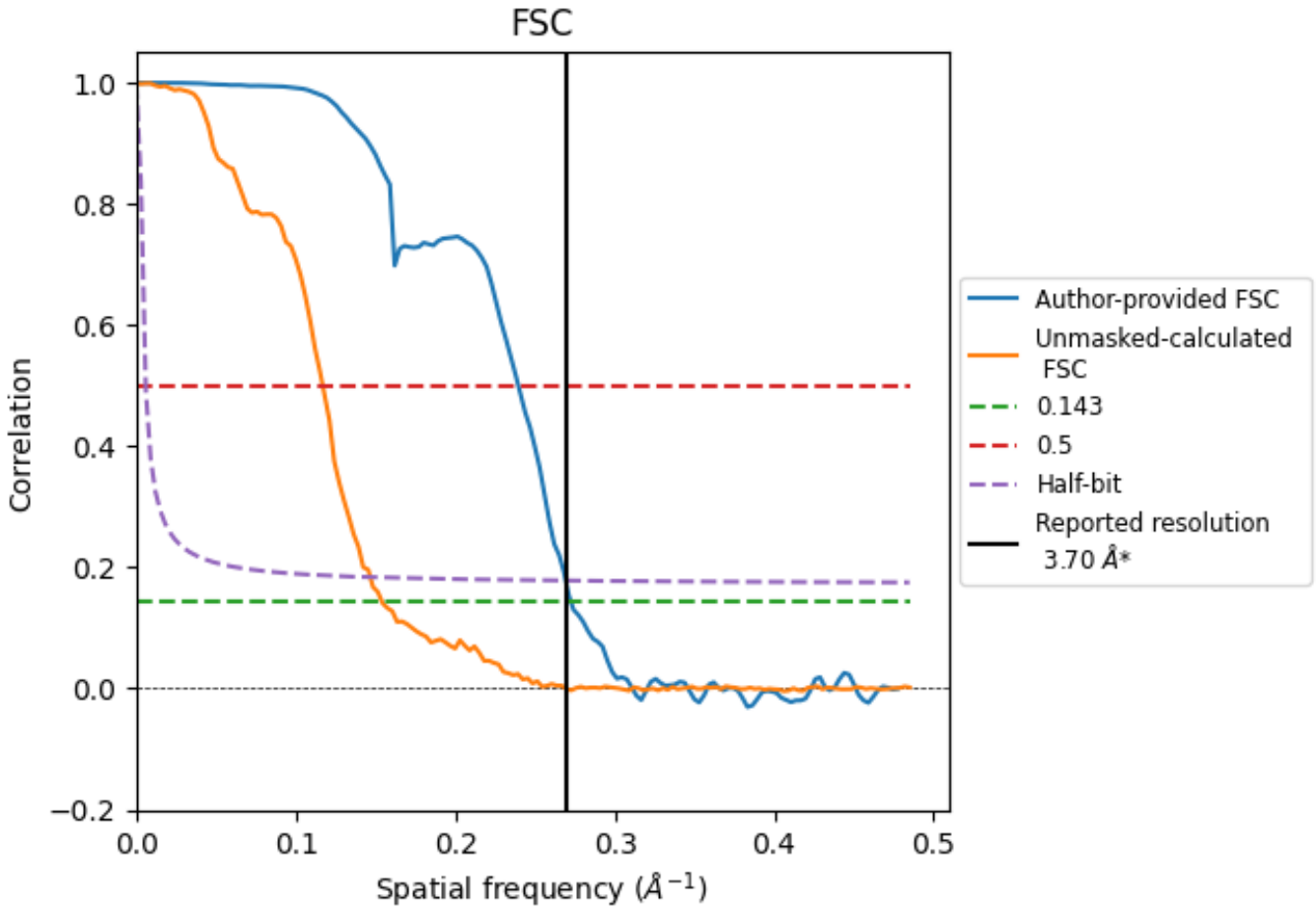


*Reported resolution corresponds to spatial frequency of 0.270 $Å^{-1}$

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 0.270 Å^{-1}

8.2 Resolution estimates (i)

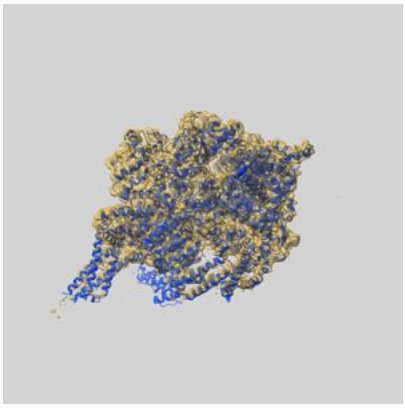
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.70	-	-
Author-provided FSC curve	3.67	4.17	3.71
Unmasked-calculated*	6.49	8.55	6.81

*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 6.49 differs from the reported value 3.7 by more than 10 %

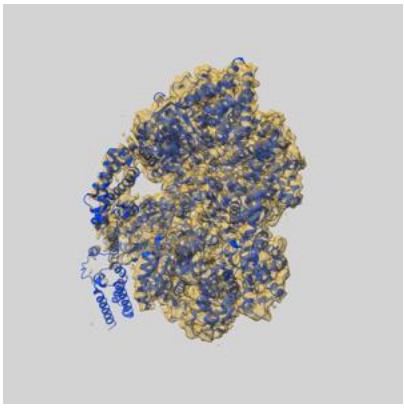
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-44712 and PDB model 9BMV. Per-residue inclusion information can be found in section 3 on page 5.

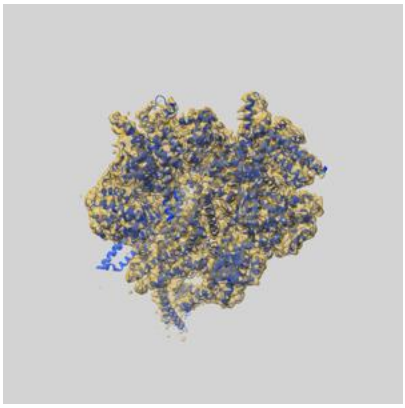
9.1 Map-model overlay



X



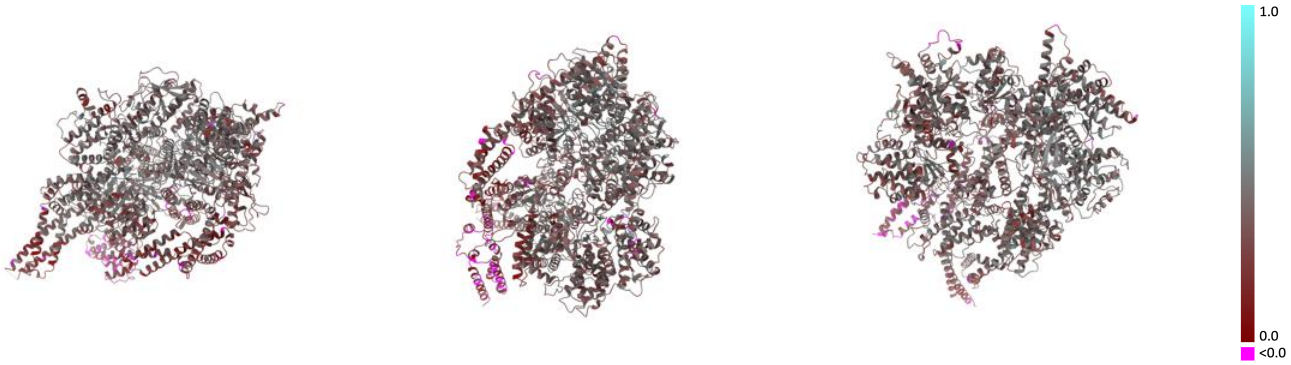
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.12 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.

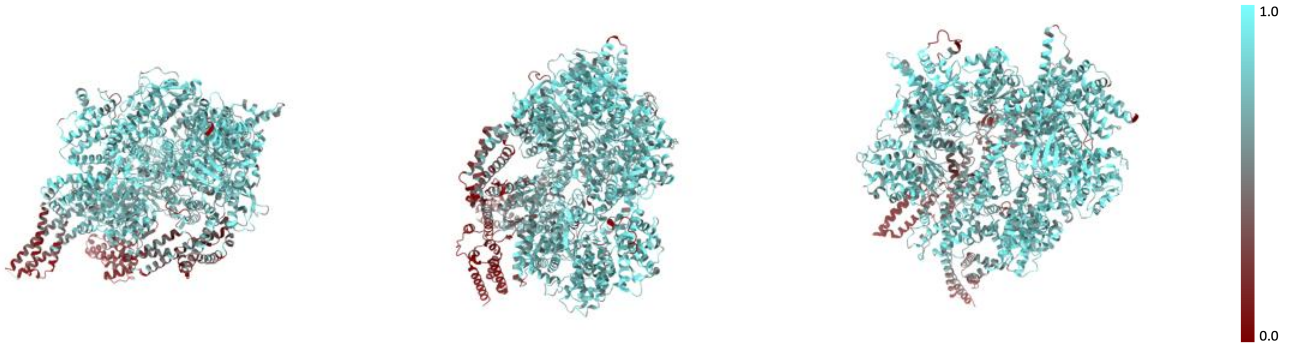
9.2 Q-score mapped to coordinate model (i)



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.

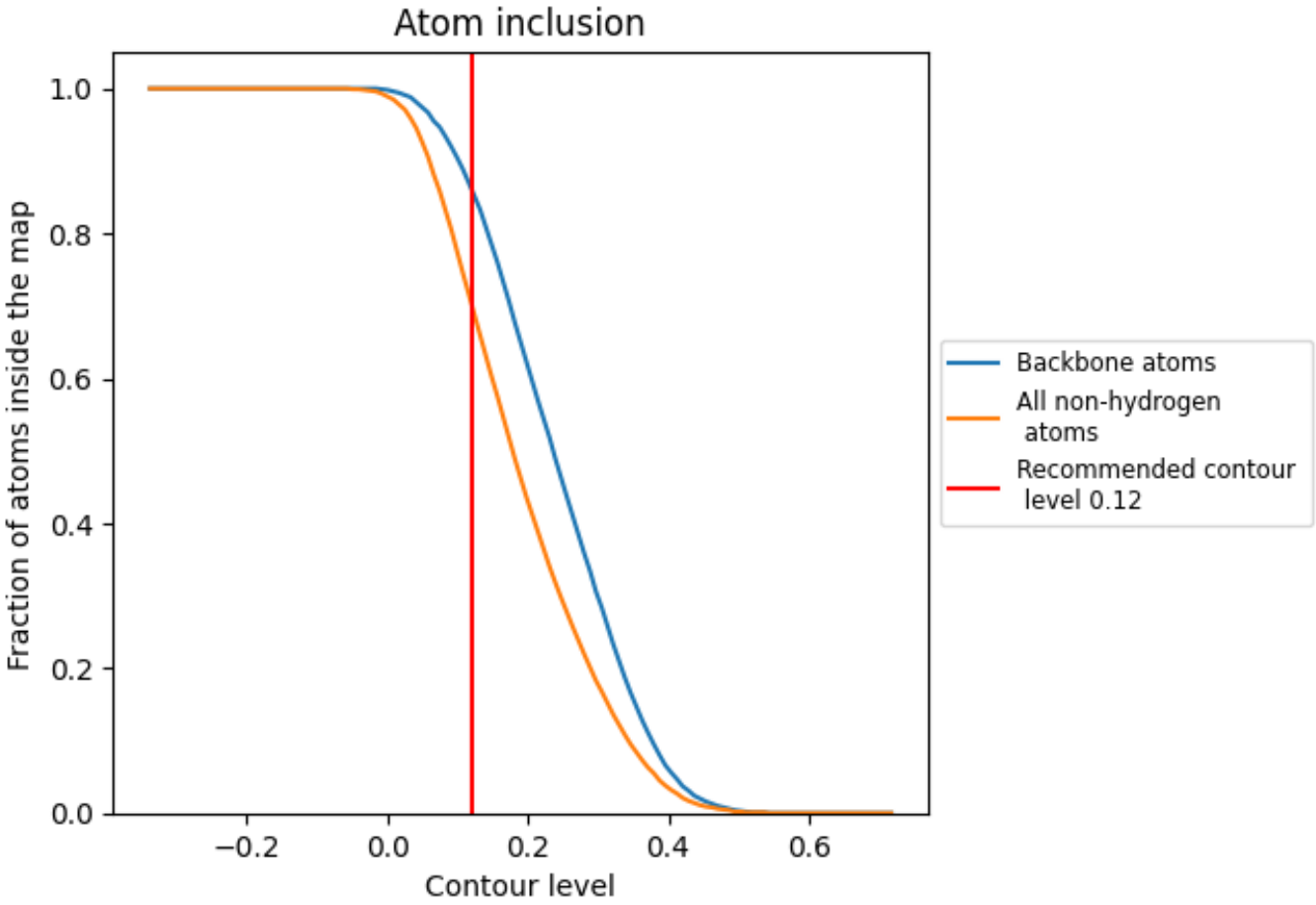
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.12).

9.4 Atom inclusion (i)



At the recommended contour level, 86% of all backbone atoms, 70% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7030	0.3600
A	0.7030	0.3600