



Full wwPDB EM Validation Report ⓘ

Mar 6, 2026 – 10:51 PM UTC

PDB ID : 9BMO / pdb_00009bmo
EMDB ID : EMD-44705
Title : State-6 of motor domain from full-length human dynein-1 in 5mM AMPPNP
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

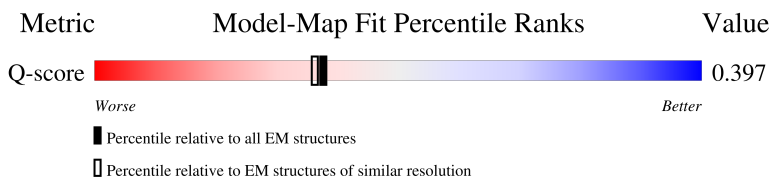
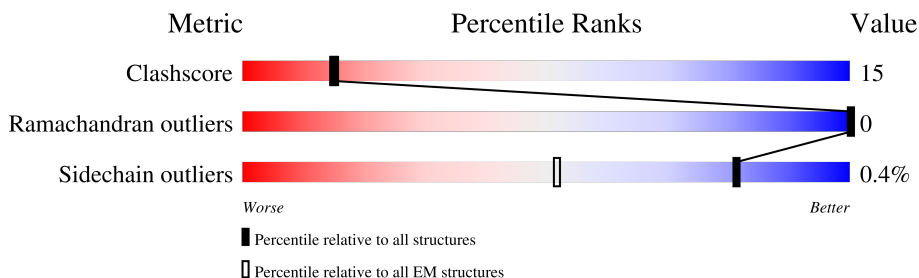
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

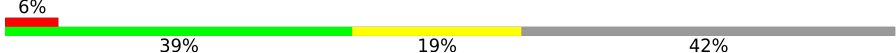
The reported resolution of this entry is 3.60 Å.

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 $\leq 5\%$. 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	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 21867 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	2711	21755	13852	3757	4035	111	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).



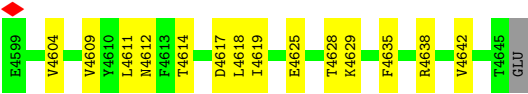
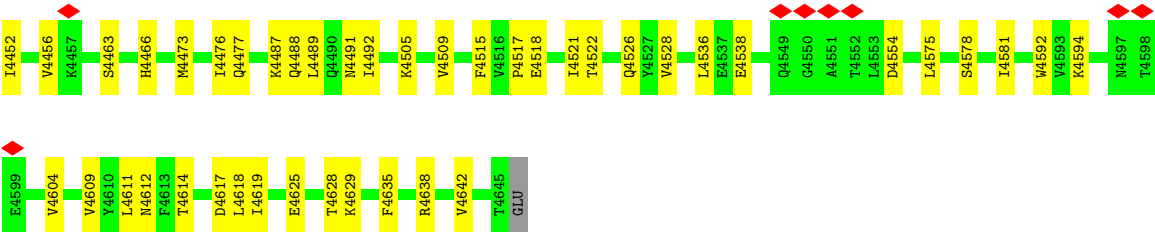


Mol	Chain	Residues	Atoms					AltConf
3	A	1	Total	C	N	O	P	0
			31	10	5	13	3	



LYS	R3164	R3088	R3007	F2926	R2831	R2726	L2632	D2505	ALA	N2329	H2252	V2141
LEU	R3167	C3089	M3008	R2927	R2835	R2727	F2635	S2506	S2410	G2350	I2253	C2142
LYS	T3168	V3090	N3009	P2928	R2836	L2728	P2635	R2507	P2411	E2331	M2145	M2146
MET	M3169	L3091	T3010	P2929	L2837	H2729	C2639	K2509	M2412	A2258	P2147	P2148
VAL	A3170	N3092	L3011	H2932	D2840	V2731	V2648	M2510	I2415	L2335	K2147	K2148
LYS	I3171	F3094	A3012	L2933	E2841	P2732	V2648	R2511	Q2416	P2336	L2157	
ASP	T3172	N3099	M3014	L2935	E2842	P2733	P2652	A2512	A2419	P2337	H2263	
GLN	Y3176	A3100	G3015	L2936	R2843	V2734	K2657	L2513	M2423	V2339	T2267	L2161
GLU	I3180	A3101	E3016	G2937	R2844	Y2735	W2658	L2514	P2430	R2340	L2268	
ALA		L3102		K2943	W2845	L2744	F2662	L2526	N2430	R2341	V2168	
GLY		Y3103	G3019		N2849	L2744	C2662	P2527	K2435	F2342	R2172	
LYS	Y3183	Q3104	L3020	L2946	I2850	I2747	C2663	N2531	A2436	N2341	P2270	
LYS	A3184	F3021	F3021	S2947	I2850	Y2748	D2664	I2532	L2437	R2271	R2179	
LYS	N3185	E3022	E3022	R2948	I2861	G2749	E2665	P2533	E2438	T2272	E2180	
VAL	L3186	G3023	G3023	F2949	R2862	R2750	I2666	I2534	E2438	R2273	E2181	
MET		R3024	D3024	V2950	R2863	A2754	N2667	D2536	A2354	W2275	K2184	
SER	E3195	F3109		A2951	E2864		L2668	Y2537	R2358	T2276	V2185	
GLN			L3029			R2757	P2669	E2538	M2361	D2277	C2186	
GLU	M3199	M3113	M3030	L2956	S2868	L2758	D2670	E2538	M2361	G2278	L2191	
ILE	H3200	D3114	H3200	S2957	R2869	L2759	D2671	Y2537	L2443	L2279	D2195	
GLN	L3201	L3115	L3115	V2958	P2870	I2759	E2671	E2538	E2444	F2280	G2201	
GLN	N3202	E3116	K3034	Y2959	I2871	R2763	D2671	S2542	H2445	T2281	W2202	
LEU	V3203	Y3120	E3035	Q2960	Y2873	A2766	K2673	W2545	M2447	G2286	K2203	
HIS	G3204		Q3038	L2961	Y2873		G2675	W2545	D2448	L2281	E2205	
GLN	L3205			K2962		T2770	G2675	W2548	L2449	D2367	L2208	
GLN	R3206		G3041	H2964	D2880	T2785	F2682	K2561	Q2464	L2386	I2213	
GLY	K3207		L3042	R2965	Y2881	Q2786	I2683	P2570	A2465	P2386	L2220	
VAL	R3207		M3043	K2966	D2885	D2787	K2684	W2584	D2478	L2387	W2221	
ILE	I3208		L3044	Y2967	Q2886	T2788	Q2685	L2585	F2479	D2388	M2222	
ASP	K3209		D3045	T2968	E2887		W2686	E2568	P2480	E2389	V2204	
ASP	E3210			G2969	E2888	H2791	V2687		M2481	GLY	E2205	
LYS	T3211		E3049	D2973	Y2892	Y2794	F2692	K2561	Q2464	L2382	L2208	
GLN	V3212		T3055	E2974	A2895		Y2693	P2570	A2465	P2386	Q2209	
SER	D3213			D2975	R2896	T2800	D2697	T2583	D2478	L2387	L2220	
VAL	Q3214		I3059	L2976	L2897	R2801	Q2697	W2584	F2479	E2389	W2221	
GLY	V3215			R2977	K2898		Q2698	L2585	P2480	E2389	M2222	
ASP	E3216		F3066	L2980	V2899	L2810	W2701	V2592	M2481	GLY	F2303	
LEU	E3217		M3068	L2990	F2900			L2593	Q2482	ASP	D2304	
ASP	L3218		P3070	I2990	Y2901			C2594	I2483	GLU	S2228	
LYS	R3219		S3071	L2993	L2909	L2813	E2704	C2594	E2484	ALA	G2229	
PRO	R3220		S3072	M2994	V2910	E2814	R2705	T2602	Q2485	ALA	K2230	
ALA	ASP		E3073	E2996	L2911	T2815	Q2707	R2610	L2486	GLN	S2231	
VAL	LEU		G3074	S2997	L2912	L2816	F2708	A2511	E2487	ARG	M2232	
ILE	ARG		L3075	N2998	V2915	P2817	V2709	R2610	R2488	ARG	K2233	
GLY	ILE		L3076	V2999	L2919	E2818	G2710	A2511	T2489	ARG	W2234	
ALA	LYS		K3077	L3000	L2820	G2820	Q2711	P2613	L2490	LYS	V2235	
GLN	SER		K3078	D3001	R2823	L2822	G2712	P2613	Q2491	GLY	L2237	
GLN	GLN		R3078	G3002	R2823	L2822	G2712	M2615	R2492	LYS	L2238	
ALA	GLU		A3079	S3003	L2824	W2825	G2719	M2621	T2490	GLU	K2239	
VAL	LEU		A3080	G3004	R2921	W2825	G2719	W2821	L2498	ASP	L2244	
LYS	GLU		T3081	L3005	L2922	W2825	G2719	E2629	L2502	GLY	E2248	
SER			S3082	E3006	R2923	E2828	F2722	E2629	S2503	GLY	G2249	
			A3083		R2924		F2722		G2504	ALA		
			L3085									
			F3086									
			R3087									





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	82309	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 ($e^-/\text{\AA}^2$)	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	1.305	Depositor
Minimum map value	-0.690	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.038	Depositor
Recommended contour level	0.2	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 [i](#)

5.1 Standard geometry [i](#)

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

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	0.14	0/22220	0.36	3/30121 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	4132	PRO	CA-N-CD	-12.43	94.59	112.00
1	A	4132	PRO	N-CD-CG	-6.11	94.04	103.20
1	A	2929	PRO	CA-N-CD	-5.10	104.86	112.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	21755	0	21789	653	0
2	A	81	0	36	9	0
3	A	31	0	12	7	0
All	All	21867	0	21837	653	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 15.

All (653) 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:2452:LEU:HD23	1:A:2729:ARG:HD2	1.57	0.84
1:A:3570:ASP:OD1	1:A:3571:ASP:N	2.20	0.74
1:A:4388:LEU:HD21	1:A:4431:LEU:HB3	1.70	0.74
1:A:4377:MET:HE3	1:A:4438:CYS:HA	1.69	0.73
1:A:2935:LEU:HD13	1:A:2943:LYS:HB3	1.70	0.73
1:A:3736:GLY:O	1:A:3740:LEU:N	2.22	0.73
1:A:4021:MET:HE3	1:A:4021:MET:HA	1.70	0.72
1:A:4448:LEU:O	1:A:4452:ILE:HG12	1.90	0.71
1:A:2228:SER:OG	1:A:2230:LYS:NZ	2.24	0.70
1:A:4176:ARG:NH1	1:A:4220:ASP:OD1	2.25	0.70
1:A:4473:MET:HG3	1:A:4477:GLN:HG3	1.73	0.70
1:A:2749:GLY:HA2	1:A:2770:THR:HG21	1.72	0.70
1:A:2412:MET:HA	1:A:2415:ILE:HG22	1.73	0.70
1:A:2028:LEU:HD12	1:A:2029:PRO:HD2	1.74	0.69
1:A:1709:MET:HE1	1:A:1872:TYR:HB2	1.73	0.69
1:A:2880:ASP:OD2	1:A:2881:TYR:N	2.26	0.69
1:A:2996:GLU:OE2	1:A:3069:ASN:ND2	2.25	0.69
1:A:4081:ASP:OD1	1:A:4112:LYS:NZ	2.24	0.69
1:A:1938:PHE:CE2	1:A:1967:MET:HG2	2.26	0.69
1:A:3967:GLU:OE1	1:A:3967:GLU:N	2.21	0.69
1:A:2437:LEU:HD21	1:A:2451:ARG:HG3	1.73	0.69
1:A:3102:LEU:HB3	1:A:3176:TYR:HE2	1.58	0.69
1:A:3886:LEU:HD11	1:A:4346:MET:HG3	1.75	0.69
1:A:3006:GLU:HA	1:A:3009:ASN:ND2	2.07	0.68
1:A:4010:SER:HB2	1:A:4015:GLU:HA	1.75	0.67
1:A:2054:LEU:HG	1:A:2097:LEU:HD22	1.77	0.67
1:A:3990:LEU:HD13	1:A:4004:MET:HG3	1.76	0.67
1:A:2585:LEU:HD12	1:A:2707:GLN:HE21	1.60	0.67
1:A:2688:GLU:HB2	1:A:2730:HIS:HE1	1.59	0.67
1:A:3914:ILE:HB	1:A:3937:ARG:HD3	1.77	0.67
1:A:1711:VAL:HG22	1:A:1853:VAL:HG21	1.78	0.66
1:A:1836:PHE:HA	1:A:1839:LEU:HB2	1.77	0.66
1:A:4113:LEU:HD11	1:A:4124:LEU:HD13	1.78	0.66
1:A:1631:PHE:HA	1:A:1944:ILE:HG22	1.77	0.66
1:A:3500:MET:HA	1:A:3500:MET:HE2	1.77	0.66
1:A:1951:VAL:HG13	1:A:1953:ALA:H	1.61	0.66
1:A:1880:VAL:HG21	1:A:2049:ILE:HG12	1.78	0.66
1:A:2016:ILE:HG22	1:A:2018:MET:HE1	1.78	0.65
1:A:4400:ARG:HH21	1:A:4405:ILE:HG12	1.61	0.65
1:A:2231:SER:OG	1:A:2344:GLU:OE2	2.13	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2961:ILE:O	1:A:2998:ASN:ND2	2.26	0.65
1:A:3566:SER:OG	1:A:3602:ASN:ND2	2.29	0.65
1:A:3158:ASN:ND2	1:A:3169:MET:O	2.25	0.65
1:A:2447:MET:HE1	1:A:2723:LEU:HD13	1.78	0.65
1:A:2747:ILE:HD11	2:A:4703:ADP:C6	2.31	0.65
1:A:3135:GLN:O	1:A:3137:PRO:HD3	1.97	0.65
1:A:2269:ASP:HB2	1:A:2274:GLU:HG2	1.79	0.65
1:A:4463:SER:O	1:A:4466:HIS:NE2	2.27	0.65
1:A:2181:GLU:HG3	1:A:2244:LEU:HB2	1.79	0.64
1:A:3513:PHE:HZ	1:A:3575:GLU:HB3	1.61	0.64
1:A:3981:THR:HG23	1:A:3984:GLY:H	1.62	0.64
1:A:1778:LEU:HB3	1:A:1826:ILE:HD11	1.79	0.64
1:A:3727:LYS:O	1:A:3731:LEU:N	2.31	0.64
1:A:3966:PRO:HD2	1:A:4000:ARG:HG3	1.78	0.64
1:A:1812:ILE:HD13	1:A:2056:SER:HA	1.79	0.64
1:A:2688:GLU:HB2	1:A:2730:HIS:CE1	2.32	0.64
1:A:2271:ASN:ND2	1:A:2272:THR:HG23	2.13	0.64
1:A:2527:PRO:HD2	1:A:2534:ILE:HD12	1.78	0.64
1:A:2963:VAL:HG11	1:A:2998:ASN:HA	1.80	0.64
1:A:4099:VAL:HG12	1:A:4106:LEU:HD21	1.80	0.63
1:A:3620:ARG:NH2	1:A:3642:ASP:OD2	2.31	0.63
1:A:2612:LEU:HD13	1:A:2615:MET:HE2	1.79	0.63
1:A:2269:ASP:OD2	1:A:2272:THR:OG1	2.16	0.63
1:A:2910:VAL:HG21	1:A:3105:VAL:HG22	1.81	0.63
1:A:1912:LYS:HE2	1:A:2017:THR:HB	1.81	0.63
1:A:3519:TYR:O	1:A:3700:ASN:ND2	2.32	0.63
1:A:3099:THR:HA	1:A:3102:LEU:HD12	1.81	0.62
1:A:2794:TYR:HE1	1:A:2836:ARG:HD2	1.65	0.62
1:A:3734:LEU:HD13	1:A:3783:LYS:HB3	1.82	0.62
1:A:2934:LEU:HD13	1:A:3066:PHE:CZ	2.35	0.62
1:A:1964:GLU:HB3	1:A:1967:MET:HE3	1.81	0.62
1:A:2919:VAL:HG23	1:A:2950:VAL:HG22	1.81	0.62
1:A:2684:ARG:NH1	1:A:2688:GLU:OE2	2.30	0.61
1:A:2957:SER:HB2	1:A:2990:ILE:HD12	1.81	0.61
1:A:3851:ASP:HB3	1:A:3854:GLN:HB3	1.80	0.61
1:A:2452:LEU:HB3	1:A:2729:ARG:HG3	1.83	0.61
1:A:1628:ARG:NH1	1:A:1871:GLU:OE2	2.34	0.61
1:A:4187:HIS:ND1	1:A:4212:LEU:HD22	2.15	0.61
1:A:2925:ILE:HG21	1:A:2933:LEU:HB2	1.81	0.61
1:A:2485:GLN:OE1	1:A:2488:ARG:NH1	2.34	0.61
1:A:3172:THR:HG21	1:A:3694:SER:HB2	1.81	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4043:MET:HE1	1:A:4055:VAL:HB	1.84	0.60
1:A:3147:CYS:O	1:A:3150:VAL:HG12	2.01	0.60
1:A:4260:PHE:CE2	1:A:4618:LEU:HD11	2.37	0.60
1:A:2925:ILE:HG13	1:A:3090:VAL:HG21	1.83	0.60
1:A:2994:MET:HE3	1:A:2995:ASP:H	1.67	0.60
1:A:3520:PHE:HB3	1:A:3524:MET:HB3	1.84	0.60
1:A:1842:MET:HA	1:A:1861:MET:HG3	1.84	0.60
1:A:2863:ARG:O	1:A:2863:ARG:NH1	2.34	0.59
1:A:4445:THR:O	1:A:4449:ARG:N	2.30	0.59
1:A:4611:LEU:HB2	1:A:4619:ILE:HD11	1.84	0.59
1:A:2232:MET:HA	1:A:2235:ARG:HB2	1.84	0.59
1:A:2666:ILE:HG22	1:A:2712:CYS:HB3	1.85	0.59
1:A:1912:LYS:N	2:A:4701:ADP:O3B	2.35	0.59
1:A:2277:ASP:O	1:A:2698:GLN:NE2	2.34	0.59
1:A:4030:ILE:HG21	1:A:4145:PHE:HZ	1.68	0.59
1:A:3909:LEU:HD21	1:A:4343:MET:HG2	1.82	0.59
1:A:1686:PHE:HA	1:A:1712:THR:HG21	1.85	0.59
1:A:3588:LEU:HD12	1:A:3679:LEU:HB2	1.84	0.59
1:A:2813:LEU:HD21	1:A:2816:LEU:HB2	1.84	0.59
1:A:3885:MET:HB3	1:A:4343:MET:HE1	1.85	0.59
1:A:3825:TYR:CZ	1:A:3875:MET:HG3	2.38	0.59
1:A:1975:VAL:HA	1:A:1978:ILE:HG22	1.85	0.59
1:A:2221:MET:HG2	1:A:2343:PHE:HB2	1.83	0.58
1:A:1934:GLU:OE2	1:A:1934:GLU:N	2.33	0.58
1:A:2309:PRO:HA	1:A:2312:VAL:HG12	1.85	0.58
1:A:2816:LEU:HD11	1:A:2820:GLY:HA3	1.85	0.58
1:A:2179:ARG:NH2	1:A:2195:ASP:OD2	2.36	0.58
1:A:1839:LEU:O	1:A:1843:ARG:NH1	2.37	0.58
1:A:2748:TYR:OH	1:A:2800:THR:OG1	2.19	0.58
1:A:4260:PHE:HE2	1:A:4618:LEU:HD11	1.69	0.58
1:A:1808:LEU:O	1:A:1812:ILE:HG22	2.04	0.58
1:A:2179:ARG:HD3	1:A:2208:LEU:HD11	1.86	0.58
1:A:2845:TRP:NE1	1:A:2849:ASN:HD21	2.01	0.58
1:A:3021:PHE:CD2	1:A:3029:LEU:HD22	2.39	0.58
1:A:2994:MET:HE1	1:A:2998:ASN:HB3	1.86	0.57
1:A:2419:ALA:O	1:A:2423:MET:HG2	2.04	0.57
1:A:1649:LYS:HD2	1:A:2273:ARG:HH12	1.70	0.57
1:A:1880:VAL:HG22	2:A:4701:ADP:N1	2.19	0.57
1:A:3169:MET:HE3	1:A:3169:MET:HA	1.86	0.57
1:A:1721:VAL:HA	1:A:1724:VAL:HG12	1.85	0.57
1:A:3839:VAL:HG21	1:A:3863:LEU:HA	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3974:TRP:HZ2	1:A:3985:GLN:HG2	1.69	0.57
1:A:4186:PHE:O	1:A:4189:ILE:HG22	2.04	0.57
1:A:1623:ARG:NH2	1:A:1637:LEU:HD22	2.19	0.57
1:A:3902:ASP:OD1	1:A:3902:ASP:N	2.34	0.57
1:A:2819:GLU:OE1	1:A:2819:GLU:N	2.25	0.57
1:A:4295:GLN:OE1	1:A:4296:MET:N	2.38	0.57
1:A:1766:LEU:HD22	1:A:1778:LEU:HD11	1.86	0.57
1:A:2526:LEU:HD13	1:A:2534:ILE:HG13	1.85	0.57
1:A:3885:MET:HE2	1:A:4005:ALA:HB1	1.87	0.57
1:A:2585:LEU:HD12	1:A:2707:GLN:NE2	2.20	0.56
1:A:2316:ASN:OD1	1:A:2358:ARG:NH1	2.38	0.56
1:A:3078:ARG:O	1:A:3082:SER:OG	2.23	0.56
1:A:1879:LEU:HD23	1:A:1918:ALA:HB2	1.87	0.56
1:A:3488:ARG:HE	1:A:3489:TRP:CD1	2.22	0.56
1:A:1853:VAL:HA	1:A:1856:GLN:HG3	1.86	0.56
1:A:3624:GLU:O	1:A:3628:ARG:HG2	2.05	0.56
1:A:1967:MET:O	1:A:1971:VAL:HG22	2.06	0.56
1:A:2668:LEU:O	1:A:2721:LYS:NZ	2.35	0.56
1:A:2670:ASP:HA	1:A:2721:LYS:HE3	1.88	0.56
1:A:2901:TYR:OH	1:A:2909:LEU:N	2.38	0.56
1:A:4487:LYS:O	1:A:4491:ASN:ND2	2.38	0.56
1:A:3821:ILE:HG23	1:A:4346:MET:HE3	1.88	0.56
1:A:4346:MET:HA	1:A:4346:MET:HE2	1.87	0.56
1:A:1909:GLY:N	2:A:4701:ADP:O2B	2.36	0.55
1:A:3217:GLU:HB3	1:A:3220:ARG:HH21	1.71	0.55
1:A:1873:LEU:O	1:A:1876:GLN:NE2	2.38	0.55
1:A:4066:ILE:HD12	1:A:4095:MET:HG3	1.86	0.55
1:A:4518:GLU:OE2	1:A:4518:GLU:N	2.30	0.55
1:A:1961:ASN:HD21	1:A:2019:ASN:HB3	1.72	0.55
1:A:2148:LYS:HG2	1:A:2361:MET:HB3	1.87	0.55
1:A:3909:LEU:HB3	1:A:4344:LEU:HD13	1.88	0.55
1:A:1632:VAL:O	1:A:1943:ARG:NH1	2.26	0.55
1:A:2354:ALA:HB1	1:A:2358:ARG:HH22	1.71	0.55
1:A:2785:THR:HG22	1:A:2787:ASP:H	1.71	0.55
1:A:2279:LEU:O	1:A:2283:VAL:HG23	2.06	0.55
1:A:2505:ASP:OD1	1:A:2505:ASP:N	2.40	0.55
1:A:3030:MET:N	1:A:3030:MET:SD	2.79	0.55
1:A:1687:LYS:HG2	1:A:1712:THR:HG22	1.88	0.55
1:A:2337:PRO:O	1:A:2340:ARG:NH1	2.39	0.55
1:A:2801:ARG:NH1	1:A:2801:ARG:O	2.40	0.55
1:A:3999:ASP:OD1	1:A:4329:ARG:NH1	2.40	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4066:ILE:HG22	1:A:4093:TRP:HB2	1.89	0.55
1:A:4423:LEU:HD13	1:A:4466:HIS:CE1	2.41	0.55
1:A:4476:ILE:HD12	1:A:4476:ILE:H	1.72	0.55
1:A:3874:GLY:HA3	1:A:4144:ILE:HG13	1.88	0.54
1:A:4452:ILE:O	1:A:4456:VAL:HG22	2.07	0.54
1:A:4505:LYS:NZ	1:A:4554:ASP:O	2.40	0.54
1:A:4628:THR:O	1:A:4629:LYS:HG2	2.08	0.54
1:A:4027:LEU:O	1:A:4031:VAL:HG12	2.07	0.54
1:A:2452:LEU:HD21	3:A:4702:ATP:H4'	1.88	0.54
1:A:2766:ALA:O	1:A:2770:THR:HG23	2.06	0.54
1:A:3071:SER:HB3	1:A:3078:ARG:HH22	1.72	0.54
1:A:2141:VAL:O	1:A:2145:MET:HB2	2.08	0.54
1:A:2602:THR:HG23	1:A:2662:PHE:HE1	1.72	0.54
1:A:2612:LEU:HB3	1:A:2615:MET:SD	2.47	0.54
1:A:3929:VAL:O	1:A:3933:GLU:HG2	2.08	0.54
1:A:1903:SER:O	1:A:1903:SER:OG	2.26	0.54
1:A:3526:GLN:OE1	1:A:3549:ARG:NH2	2.33	0.54
1:A:1963:LEU:HD23	1:A:1967:MET:HB3	1.90	0.54
1:A:2980:LEU:HD21	1:A:3011:LEU:HD11	1.88	0.54
1:A:3572:LEU:HD21	1:A:3701:PHE:HA	1.89	0.54
1:A:4374:PRO:HG2	1:A:4377:MET:HB2	1.89	0.54
1:A:1866:PHE:HD2	1:A:1923:LEU:HD11	1.73	0.54
1:A:2485:GLN:NE2	1:A:2542:SER:O	2.38	0.54
1:A:4170:CYS:SG	1:A:4301:ARG:NH2	2.80	0.54
1:A:1879:LEU:HD12	2:A:4701:ADP:C6	2.43	0.53
1:A:2819:GLU:HA	1:A:2861:ILE:HD11	1.90	0.53
1:A:2191:LEU:HD21	1:A:2232:MET:HE1	1.90	0.53
1:A:3646:ASN:OD1	1:A:3650:ASN:ND2	2.41	0.53
1:A:1654:PHE:CE1	1:A:1702:LEU:HD11	2.44	0.53
1:A:1912:LYS:HG2	1:A:2041:MET:HG3	1.90	0.53
1:A:1940:ALA:O	1:A:1944:ILE:HG23	2.08	0.53
1:A:2071:PRO:O	1:A:2075:LEU:HG	2.08	0.53
1:A:2222:MET:HE2	1:A:2342:MET:HG2	1.89	0.53
1:A:4488:GLN:O	1:A:4492:ILE:HG12	2.08	0.53
1:A:4609:VAL:HG22	1:A:4642:VAL:HB	1.90	0.53
1:A:2498:ILE:HG23	1:A:2502:LEU:HD22	1.91	0.53
1:A:2621:ASN:HA	1:A:2664:ASP:HB2	1.90	0.53
1:A:1812:ILE:HD11	1:A:2055:TYR:HD1	1.73	0.53
1:A:2277:ASP:OD1	1:A:2277:ASP:N	2.38	0.53
1:A:4211:ASP:OD1	1:A:4255:ARG:NH1	2.42	0.53
1:A:2505:ASP:HA	1:A:2735:TYR:HB2	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1626:PHE:HE1	1:A:1706:GLU:HG3	1.73	0.53
1:A:2744:LEU:HA	1:A:2747:ILE:HG22	1.91	0.53
1:A:4538:GLU:OE1	1:A:4594:LYS:NZ	2.40	0.53
1:A:3005:LEU:HD21	1:A:3082:SER:HB3	1.91	0.53
1:A:3730:ASP:O	1:A:3734:LEU:HG	2.09	0.53
1:A:3924:ILE:HD12	1:A:3924:ILE:H	1.74	0.53
1:A:3999:ASP:OD1	1:A:4329:ARG:HG3	2.08	0.52
1:A:3103:TYR:OH	1:A:3107:LYS:NZ	2.42	0.52
1:A:1938:PHE:CZ	1:A:1967:MET:HG2	2.43	0.52
1:A:1623:ARG:HA	1:A:1629:PHE:HE2	1.75	0.52
1:A:3888:ALA:HA	1:A:4013:LEU:HD11	1.91	0.52
1:A:2747:ILE:HD11	2:A:4703:ADP:C5	2.45	0.52
1:A:1816:VAL:HG11	1:A:2052:VAL:HG22	1.92	0.52
1:A:2673:LYS:NZ	1:A:2674:TYR:OH	2.43	0.52
1:A:2814:GLU:HG2	1:A:2815:THR:HG23	1.91	0.52
1:A:3879:ASP:OD1	1:A:4342:LYS:NZ	2.34	0.52
1:A:4247:MET:HA	1:A:4251:ILE:HG13	1.91	0.52
1:A:2445:HIS:CD2	1:A:2449:LEU:HD13	2.45	0.52
1:A:2720:ARG:HH21	1:A:3083:PRO:HB3	1.75	0.52
1:A:2845:TRP:CD1	1:A:2849:ASN:HD21	2.28	0.52
1:A:2821:LEU:O	1:A:2824:ILE:HG22	2.10	0.52
1:A:3785:GLU:O	1:A:3789:ILE:HG13	2.10	0.52
1:A:2012:MET:SD	1:A:2013:ALA:N	2.83	0.51
1:A:2066:ALA:HA	1:A:2069:ILE:HG22	1.92	0.51
1:A:3742:LEU:HD12	1:A:3776:GLU:HB3	1.92	0.51
1:A:2635:PHE:O	1:A:2639:CYS:N	2.37	0.51
1:A:2129:GLU:N	1:A:2129:GLU:OE1	2.43	0.51
1:A:3947:LEU:O	1:A:3951:VAL:HG23	2.11	0.51
1:A:4157:MET:HE3	1:A:4185:TRP:HE3	1.75	0.51
1:A:1812:ILE:HD11	1:A:2055:TYR:CD1	2.45	0.51
1:A:3006:GLU:HA	1:A:3009:ASN:HD21	1.72	0.51
1:A:3514:ILE:HD11	1:A:3553:LEU:HD13	1.91	0.51
1:A:3744:GLN:O	1:A:3747:LYS:HG3	2.11	0.51
1:A:2682:PHE:O	1:A:2686:MET:HG3	2.10	0.51
1:A:3161:LEU:HD13	1:A:3524:MET:HE3	1.92	0.51
1:A:2667:ASN:HB3	1:A:2723:LEU:HD11	1.93	0.51
1:A:4439:GLU:HB3	1:A:4441:LYS:HE3	1.92	0.51
1:A:3109:PHE:HB3	1:A:3180:ILE:HG21	1.93	0.51
1:A:1946:VAL:HG23	1:A:2006:VAL:HG21	1.93	0.50
1:A:2872:LEU:HD12	1:A:2920:LEU:HD12	1.92	0.50
1:A:4521:ILE:HG13	1:A:4522:THR:N	2.26	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2031:ASN:OD1	1:A:2031:ASN:N	2.45	0.50
1:A:3510:SER:HB3	1:A:3553:LEU:HD21	1.92	0.50
1:A:3594:GLY:O	1:A:3597:THR:OG1	2.24	0.50
1:A:3730:ASP:O	1:A:3734:LEU:N	2.42	0.50
1:A:2283:VAL:O	1:A:2287:ILE:HG13	2.12	0.50
1:A:3881:ILE:HG13	1:A:4339:MET:HE1	1.93	0.50
1:A:4260:PHE:HD1	1:A:4263:ARG:NH2	2.10	0.50
1:A:2483:ILE:HD12	1:A:2486:LEU:HD22	1.93	0.50
1:A:3099:THR:OG1	1:A:3100:GLU:OE2	2.29	0.50
1:A:3579:MET:HE2	1:A:3699:VAL:HG12	1.94	0.50
1:A:3909:LEU:HD11	1:A:4343:MET:HG2	1.93	0.50
1:A:4065:GLN:OE1	1:A:4065:GLN:N	2.33	0.50
1:A:4575:LEU:HB3	1:A:4635:PHE:CZ	2.46	0.50
1:A:3817:SER:OG	1:A:4346:MET:SD	2.67	0.50
1:A:3989:ARG:HA	1:A:3992:LEU:HD12	1.94	0.50
1:A:4617:ASP:N	1:A:4617:ASP:OD2	2.43	0.50
1:A:1800:GLN:OE1	1:A:1804:ARG:NH1	2.45	0.49
1:A:2201:GLY:O	1:A:2205:GLU:HG2	2.12	0.49
1:A:2235:ARG:HH12	1:A:2253:ILE:HD11	1.76	0.49
1:A:2923:ASP:OD2	1:A:2927:ARG:NH2	2.42	0.49
1:A:4178:ARG:HD2	1:A:4296:MET:HE3	1.94	0.49
1:A:2503:SER:HB3	1:A:2514:LEU:HD22	1.93	0.49
1:A:3115:LEU:HD23	1:A:3143:ILE:HD13	1.94	0.49
1:A:4202:SER:OG	1:A:4261:ASP:OD2	2.29	0.49
1:A:4380:LEU:HA	1:A:4383:THR:HG22	1.93	0.49
1:A:1810:HIS:NE2	1:A:1876:GLN:O	2.46	0.49
1:A:2191:LEU:HD12	3:A:4702:ATP:C6	2.47	0.49
1:A:3612:THR:O	1:A:3635:VAL:HA	2.12	0.49
1:A:1914:GLU:OE2	2:A:4701:ADP:H3'	2.13	0.49
1:A:2369:LEU:HD23	1:A:2373:MET:SD	2.52	0.49
1:A:3790:VAL:HG22	1:A:3794:VAL:HG21	1.94	0.49
1:A:2042:THR:HG23	1:A:2043:LYS:HG2	1.94	0.49
1:A:3501:SER:HB2	1:A:3542:GLN:HB2	1.94	0.49
1:A:3924:ILE:HB	1:A:3927:LEU:HD12	1.94	0.49
1:A:1864:ALA:HB2	1:A:1897:GLU:HB2	1.93	0.49
1:A:3999:ASP:OD2	1:A:4000:ARG:N	2.46	0.49
1:A:1653:HIS:O	1:A:1657:MET:HE3	2.13	0.49
1:A:2480:PRO:HG2	1:A:2482:GLN:HE22	1.77	0.49
1:A:2369:LEU:HD21	3:A:4702:ATP:C4	2.48	0.49
1:A:2509:LYS:O	1:A:2513:GLU:HG3	2.13	0.49
1:A:3636:GLN:HA	1:A:3680:SER:HB3	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3840:LEU:HA	1:A:3859:ILE:HD11	1.94	0.49
1:A:4004:MET:O	1:A:4007:MET:HG3	2.13	0.49
1:A:4194:LEU:HD23	1:A:4201:TRP:CD1	2.47	0.49
1:A:4375:ALA:O	1:A:4379:THR:HG23	2.13	0.49
1:A:2943:LYS:HG2	1:A:3094:PHE:CD2	2.48	0.48
1:A:3071:SER:OG	1:A:3073:GLU:OE1	2.30	0.48
1:A:2349:LYS:HE2	1:A:2349:LYS:HB2	1.67	0.48
1:A:2825:TRP:HZ3	1:A:2850:ILE:HG23	1.78	0.48
1:A:2492:ARG:HG2	1:A:2545:TRP:NE1	2.27	0.48
1:A:2533:PRO:HB2	1:A:2535:ILE:HG22	1.94	0.48
1:A:3756:VAL:O	1:A:3759:ARG:HG2	2.14	0.48
1:A:1747:ALA:HB2	1:A:1807:LYS:HG2	1.94	0.48
1:A:2686:MET:HG2	1:A:2692:PHE:HB3	1.95	0.48
1:A:2946:LEU:O	1:A:2950:VAL:HG23	2.14	0.48
1:A:2017:THR:C	1:A:2018:MET:HE2	2.39	0.48
1:A:2837:LEU:HD13	1:A:2842:GLU:HB3	1.96	0.48
1:A:3590:ILE:O	1:A:3701:PHE:N	2.36	0.48
1:A:3645:LEU:HB3	1:A:3649:LEU:HD13	1.95	0.48
1:A:2481:MET:HE1	1:A:2485:GLN:HB3	1.94	0.48
1:A:2960:GLN:HB3	1:A:2993:ILE:HB	1.94	0.48
1:A:2835:ASP:OD1	1:A:3092:ASN:HA	2.13	0.48
1:A:3044:LEU:HB3	1:A:3049:GLU:HG3	1.94	0.48
1:A:4154:LYS:HB2	1:A:4312:LEU:HD12	1.95	0.48
1:A:4160:THR:HG23	1:A:4212:LEU:HD21	1.94	0.48
1:A:2932:HIS:HD2	1:A:3012:LEU:HB2	1.79	0.48
1:A:3601:MET:HE2	1:A:3601:MET:N	2.29	0.48
1:A:1938:PHE:O	1:A:1942:GLY:N	2.34	0.47
1:A:1966:ARG:HH21	1:A:1970:ALA:N	2.12	0.47
1:A:2075:LEU:HD11	1:A:4536:LEU:HD12	1.96	0.47
1:A:2088:PHE:CE1	1:A:2145:MET:HE1	2.49	0.47
1:A:2220:LEU:HB2	1:A:2342:MET:HG3	1.95	0.47
1:A:3204:GLY:O	1:A:3207:LYS:HG2	2.14	0.47
1:A:3624:GLU:HG3	1:A:3669:ILE:HD13	1.95	0.47
1:A:4257:ASP:OD1	1:A:4258:ASN:N	2.47	0.47
1:A:2465:ALA:HB2	1:A:2493:TYR:CE1	2.49	0.47
1:A:3730:ASP:HA	1:A:3733:LYS:HB2	1.95	0.47
1:A:1985:HIS:HA	1:A:1997:ILE:HG13	1.94	0.47
1:A:2073:PHE:CD2	1:A:2093:LEU:HD13	2.49	0.47
1:A:2280:PHE:HE1	1:A:2301:ILE:HG21	1.78	0.47
1:A:2864:GLU:OE1	1:A:2864:GLU:N	2.41	0.47
1:A:3611:ARG:HD3	1:A:3612:THR:N	2.30	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2280:PHE:CE1	1:A:2301:ILE:HG21	2.49	0.47
1:A:2335:LEU:HD23	1:A:2336:PRO:O	2.14	0.47
1:A:2787:ASP:OD1	1:A:2788:THR:N	2.47	0.47
1:A:2840:ASP:OD1	1:A:2841:GLU:N	2.48	0.47
1:A:2263:HIS:ND1	1:A:2263:HIS:N	2.62	0.47
1:A:2671:MET:HE3	1:A:2675:GLY:HA2	1.96	0.47
1:A:2754:ALA:HA	1:A:2757:ARG:HH12	1.80	0.47
1:A:2897:LEU:HD11	1:A:2911:LEU:HD11	1.96	0.47
1:A:3150:VAL:HA	1:A:3153:THR:HG22	1.96	0.47
1:A:3789:ILE:O	1:A:3793:GLU:HG3	2.15	0.47
1:A:4075:GLU:O	1:A:4079:GLN:HG2	2.15	0.47
1:A:1701:TRP:HA	1:A:1704:LEU:HD12	1.95	0.47
1:A:3107:LYS:HZ2	1:A:3141:GLU:HG2	1.79	0.47
1:A:3575:GLU:O	1:A:3579:MET:HG3	2.14	0.47
1:A:3733:LYS:C	1:A:3736:GLY:H	2.23	0.47
1:A:2186:CYS:O	1:A:2191:LEU:N	2.47	0.47
1:A:2205:GLU:O	1:A:2209:GLN:HG3	2.13	0.47
1:A:2382:LEU:O	1:A:2416:GLN:NE2	2.45	0.47
1:A:4283:LYS:NZ	1:A:4293:ASP:OD2	2.40	0.47
1:A:1831:ASP:OD1	1:A:1831:ASP:N	2.45	0.47
1:A:2828:GLU:CD	1:A:2924:ARG:HH22	2.23	0.47
1:A:3924:ILE:HG12	1:A:3948:ILE:HD11	1.97	0.47
1:A:2932:HIS:CD2	1:A:3012:LEU:HB2	2.50	0.47
1:A:3638:VAL:HG21	1:A:3679:LEU:HB3	1.97	0.47
1:A:1926:PHE:O	1:A:1953:ALA:HB1	2.15	0.46
1:A:3591:ASP:OD1	1:A:3591:ASP:N	2.46	0.46
1:A:3683:ASP:OD2	1:A:3685:THR:OG1	2.27	0.46
1:A:1637:LEU:O	1:A:1640:ILE:HG22	2.15	0.46
1:A:3004:PHE:N	1:A:3004:PHE:CD1	2.83	0.46
1:A:3101:ALA:O	1:A:3105:VAL:HG23	2.16	0.46
1:A:3796:THR:HA	1:A:3799:GLN:HG3	1.97	0.46
1:A:4154:LYS:NZ	1:A:4310:GLU:O	2.48	0.46
1:A:4612:ASN:OD1	1:A:4612:ASN:C	2.58	0.46
1:A:1687:LYS:H	1:A:1712:THR:CG2	2.28	0.46
1:A:2592:VAL:HG23	1:A:2733:VAL:HG22	1.95	0.46
1:A:3529:PHE:CE2	1:A:3549:ARG:HD3	2.50	0.46
1:A:2238:LEU:HD21	1:A:2249:GLY:HA3	1.96	0.46
1:A:2234:TRP:CZ2	1:A:2302:VAL:HG21	2.51	0.46
1:A:3691:ASP:OD1	1:A:3692:LEU:N	2.48	0.46
1:A:3724:VAL:HG23	1:A:3794:VAL:HG22	1.97	0.46
1:A:3824:LEU:HD22	1:A:4130:ILE:HG12	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4307:GLN:O	1:A:4311:LEU:HG	2.16	0.46
1:A:2615:MET:SD	1:A:2615:MET:N	2.89	0.46
1:A:2937:GLY:O	1:A:3070:PRO:HD3	2.16	0.46
1:A:2968:THR:OG1	1:A:2969:GLY:N	2.48	0.46
1:A:3116:GLU:HG3	1:A:3140:ARG:HH21	1.81	0.46
1:A:3154:LEU:HD22	1:A:3516:TYR:HB3	1.98	0.46
1:A:4223:LEU:HD12	1:A:4223:LEU:HA	1.75	0.46
1:A:4526:GLN:HG2	1:A:4536:LEU:HD11	1.98	0.46
1:A:2864:GLU:O	1:A:2868:SER:OG	2.25	0.46
1:A:2973:ASP:OD1	1:A:3007:ARG:NH1	2.46	0.46
1:A:3783:LYS:HD3	1:A:3783:LYS:HA	1.70	0.46
1:A:2228:SER:HB2	1:A:2364:PHE:HB3	1.98	0.46
1:A:3792:GLN:O	1:A:3796:THR:OG1	2.33	0.46
1:A:3895:THR:HB	1:A:3898:GLU:OE1	2.15	0.46
1:A:4223:LEU:HD11	1:A:4238:ILE:HD12	1.98	0.46
1:A:1677:SER:HA	1:A:1683:GLU:HA	1.98	0.46
1:A:3495:THR:HG23	1:A:3496:PHE:HD1	1.81	0.46
1:A:3974:TRP:NE1	1:A:3976:GLU:OE2	2.49	0.46
1:A:4281:GLU:N	1:A:4281:GLU:OE1	2.49	0.46
1:A:1640:ILE:HD11	1:A:1650:LEU:HG	1.97	0.45
1:A:2228:SER:C	1:A:2369:LEU:HD12	2.41	0.45
1:A:2435:LYS:O	1:A:2438:GLU:HG2	2.16	0.45
1:A:2698:GLN:N	1:A:2698:GLN:OE1	2.48	0.45
1:A:2800:THR:OG1	2:A:4703:ADP:O2'	2.30	0.45
1:A:2977:ARG:HG2	1:A:3021:PHE:CE1	2.51	0.45
1:A:1626:PHE:CZ	1:A:1702:LEU:HD12	2.52	0.45
1:A:2558:GLU:H	1:A:2561:LYS:HZ3	1.64	0.45
1:A:3143:ILE:HD11	1:A:3183:TYR:OH	2.15	0.45
1:A:3512:ALA:O	1:A:3516:TYR:HB2	2.15	0.45
1:A:1628:ARG:HG3	1:A:1657:MET:HB2	1.97	0.45
1:A:2088:PHE:HE1	1:A:2145:MET:HE1	1.79	0.45
1:A:2209:GLN:O	1:A:2213:ILE:HG12	2.16	0.45
1:A:2252:HIS:NE2	1:A:2299:GLN:OE1	2.46	0.45
1:A:1717:LEU:O	1:A:1721:VAL:HG12	2.16	0.45
1:A:1968:LEU:O	1:A:1972:SER:OG	2.20	0.45
1:A:2635:PHE:HZ	1:A:2708:PHE:HZ	1.62	0.45
1:A:2076:CYS:HA	1:A:2080:LEU:HD23	1.97	0.45
1:A:3712:CYS:SG	1:A:3805:SER:HA	2.56	0.45
1:A:3817:SER:O	1:A:4346:MET:HE1	2.16	0.45
1:A:2030:ASP:OD1	1:A:2030:ASP:N	2.50	0.45
1:A:2648:VAL:HG12	1:A:2701:VAL:HG13	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3790:VAL:HA	1:A:3794:VAL:HB	1.98	0.45
1:A:3856:LEU:O	1:A:3859:ILE:HG22	2.16	0.45
1:A:2892:TYR:OH	1:A:2896:ARG:NH1	2.49	0.45
1:A:4179:LEU:HD23	1:A:4179:LEU:HA	1.80	0.45
1:A:2553:PRO:HG2	1:A:2570:PRO:HG3	1.99	0.45
1:A:2584:TRP:CH2	1:A:2732:PRO:HB2	2.52	0.45
1:A:4171:LYS:HD3	1:A:4171:LYS:HA	1.73	0.45
1:A:1747:ALA:N	1:A:1807:LYS:HE3	2.32	0.45
1:A:1981:ALA:HB2	1:A:1999:CYS:HB3	1.99	0.45
1:A:2060:ARG:CZ	1:A:2060:ARG:HA	2.47	0.45
1:A:2107:ARG:NH2	1:A:2139:GLN:OE1	2.50	0.45
1:A:2718:PRO:HB2	1:A:3080:ALA:HA	1.98	0.45
1:A:2726:ARG:NE	3:A:4702:ATP:O1G	2.41	0.45
1:A:2948:ARG:HG3	1:A:2958:VAL:HG21	1.98	0.45
1:A:2536:ASP:O	1:A:2548:TRP:HD1	2.00	0.45
1:A:1809:GLU:O	1:A:1813:THR:HG22	2.17	0.44
1:A:2221:MET:HE3	1:A:2221:MET:HB3	1.86	0.44
1:A:3875:MET:HG2	1:A:3879:ASP:HB2	1.98	0.44
1:A:2387:LEU:HD11	1:A:2463:HIS:CG	2.52	0.44
1:A:3733:LYS:HA	1:A:3733:LYS:HD3	1.86	0.44
1:A:3966:PRO:HG3	1:A:3997:ARG:NH1	2.33	0.44
1:A:2287:ILE:HA	1:A:2294:GLU:HG3	1.99	0.44
1:A:2457:SER:HB2	1:A:2732:PRO:HB3	2.00	0.44
1:A:2951:ALA:O	1:A:2956:LEU:N	2.51	0.44
1:A:3066:PHE:CZ	1:A:3085:LEU:HD11	2.53	0.44
1:A:2935:LEU:O	1:A:3068:MET:N	2.40	0.44
1:A:3606:ASP:OD1	1:A:3606:ASP:N	2.50	0.44
1:A:3913:GLU:OE2	1:A:3913:GLU:N	2.51	0.44
1:A:1659:ALA:HB2	1:A:1926:PHE:HB2	1.99	0.44
1:A:2191:LEU:HD11	1:A:2232:MET:SD	2.57	0.44
1:A:2841:GLU:O	1:A:2844:ARG:HG2	2.17	0.44
1:A:3892:LEU:HD13	1:A:3983:ILE:HG21	2.00	0.44
1:A:4575:LEU:HB3	1:A:4635:PHE:HZ	1.82	0.44
1:A:1947:GLY:O	1:A:1951:VAL:HG12	2.17	0.44
1:A:2111:ILE:HG21	1:A:2127:ILE:HG21	1.98	0.44
1:A:2583:THR:HG22	1:A:2584:TRP:HD1	1.82	0.44
1:A:4058:LEU:HA	1:A:4061:GLU:HG2	2.00	0.44
1:A:4297:PRO:HG3	1:A:4308:TRP:CD2	2.52	0.44
1:A:2810:LEU:HD11	1:A:2821:LEU:HD13	2.00	0.44
1:A:2823:ARG:HE	1:A:2871:ILE:HG12	1.82	0.44
1:A:2831:ARG:HD2	1:A:2921:ARG:HG2	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3007:ARG:HG2	1:A:3007:ARG:HH11	1.83	0.44
1:A:3044:LEU:HD22	1:A:3049:GLU:HB2	1.99	0.44
1:A:3183:TYR:CE1	1:A:3508:LEU:HA	2.53	0.44
1:A:3582:ARG:HE	1:A:3582:ARG:HB3	1.62	0.44
1:A:2382:LEU:HD12	1:A:2463:HIS:CE1	2.52	0.44
1:A:2754:ALA:HA	1:A:2757:ARG:NH1	2.33	0.44
1:A:3151:HIS:ND1	1:A:3516:TYR:OH	2.32	0.44
1:A:4612:ASN:OD1	1:A:4614:THR:N	2.51	0.44
1:A:1665:ILE:N	1:A:1675:GLY:O	2.48	0.44
1:A:2075:LEU:HD22	1:A:4526:GLN:OE1	2.18	0.44
1:A:2319:LEU:HB2	1:A:2358:ARG:HG2	1.99	0.44
1:A:2602:THR:HG23	1:A:2662:PHE:CE1	2.52	0.44
1:A:3213:ASP:O	1:A:3216:GLU:HG2	2.18	0.44
1:A:4138:LEU:HD12	1:A:4138:LEU:HA	1.82	0.44
1:A:4190:ILE:HG13	1:A:4191:GLN:N	2.33	0.44
1:A:1928:LEU:HD23	1:A:1948:LEU:HD21	2.00	0.43
1:A:1959:GLU:OE1	1:A:2019:ASN:HB2	2.18	0.43
1:A:2791:HIS:HB3	1:A:3086:PHE:CE2	2.51	0.43
1:A:3999:ASP:OD2	1:A:3999:ASP:C	2.60	0.43
1:A:1910:THR:HG21	1:A:2041:MET:HB3	2.00	0.43
1:A:2203:TRP:CH2	1:A:2236:VAL:HG11	2.52	0.43
1:A:2304:ASP:OD1	1:A:2726:ARG:NH2	2.51	0.43
1:A:2912:PHE:CE1	1:A:2915:VAL:HG23	2.53	0.43
1:A:3113:MET:CE	1:A:3184:ALA:HA	2.48	0.43
1:A:2299:GLN:HB2	1:A:2339:VAL:HG22	2.00	0.43
1:A:3120:TYR:HD1	1:A:3139:HIS:HD2	1.66	0.43
1:A:3517:ALA:HA	1:A:3520:PHE:HD2	1.83	0.43
1:A:1864:ALA:HB1	1:A:1866:PHE:CE1	2.53	0.43
1:A:2480:PRO:HG2	1:A:2482:GLN:NE2	2.34	0.43
1:A:2275:TRP:CE2	1:A:2327:LEU:HD13	2.53	0.43
1:A:4338:ASP:OD1	1:A:4342:LYS:HE3	2.19	0.43
1:A:1872:TYR:C	1:A:1873:LEU:HD23	2.44	0.43
1:A:2895:ALA:O	1:A:2899:VAL:HG23	2.18	0.43
1:A:3009:ASN:HA	1:A:3012:LEU:HG	2.00	0.43
1:A:1698:ILE:HA	1:A:1701:TRP:NE1	2.34	0.43
1:A:1941:MET:HE1	1:A:1945:PHE:CD1	2.54	0.43
1:A:2257:LYS:HA	1:A:2257:LYS:HD2	1.69	0.43
1:A:3601:MET:HE1	1:A:3634:LEU:HD13	1.99	0.43
1:A:3717:LEU:HD23	1:A:3717:LEU:HA	1.84	0.43
1:A:3808:CYS:SG	1:A:3836:TYR:HE2	2.42	0.43
1:A:4027:LEU:HB3	1:A:4058:LEU:HD12	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:4205:TYR:OH	1:A:4261:ASP:OD2	2.29	0.43
1:A:1745:TYR:O	1:A:1807:LYS:HE2	2.19	0.43
1:A:2885:ASP:HB3	1:A:2888:GLU:HG3	2.01	0.43
1:A:3055:THR:O	1:A:3059:ILE:HG23	2.19	0.43
1:A:1640:ILE:HD12	1:A:1653:HIS:ND1	2.33	0.43
1:A:1736:ASN:O	1:A:1740:THR:HG23	2.18	0.43
1:A:2157:LEU:O	1:A:2161:LEU:HD23	2.19	0.43
1:A:2172:ARG:NH2	1:A:2205:GLU:OE1	2.51	0.43
1:A:2885:ASP:OD1	1:A:2886:GLN:N	2.51	0.43
1:A:4004:MET:HE2	1:A:4004:MET:HA	2.00	0.43
1:A:1652:LYS:HG3	1:A:2330:GLY:HA2	2.01	0.43
1:A:2759:ILE:HG13	1:A:2759:ILE:O	2.19	0.43
1:A:2817:PRO:HB2	1:A:2819:GLU:OE1	2.19	0.43
1:A:3202:ASN:HA	1:A:3205:LEU:HD12	2.01	0.43
1:A:3566:SER:HG	1:A:3602:ASN:HD22	1.62	0.43
1:A:3620:ARG:NH1	1:A:3644:VAL:HG11	2.34	0.43
1:A:4102:ALA:O	1:A:4106:LEU:HD23	2.19	0.43
1:A:4489:LEU:HD11	1:A:4515:PHE:HE1	1.84	0.43
1:A:1789:LEU:HD11	1:A:1816:VAL:HG23	2.01	0.42
1:A:2594:CYS:HA	1:A:2712:CYS:O	2.19	0.42
1:A:2685:GLN:NE2	1:A:2692:PHE:HA	2.34	0.42
1:A:4277:SER:HA	1:A:4282:PHE:CG	2.54	0.42
1:A:1677:SER:OG	1:A:1678:SER:N	2.51	0.42
1:A:2452:LEU:HA	1:A:2452:LEU:HD12	1.64	0.42
1:A:2658:TRP:CE3	1:A:2705:ARG:HA	2.54	0.42
1:A:2816:LEU:HD12	1:A:2817:PRO:HD2	2.00	0.42
1:A:3783:LYS:O	1:A:3787:THR:HG23	2.19	0.42
1:A:4444:GLN:HB2	1:A:4449:ARG:NH2	2.34	0.42
1:A:2977:ARG:HG2	1:A:3021:PHE:HE1	1.84	0.42
1:A:3487:GLU:O	1:A:3491:LYS:HG2	2.19	0.42
1:A:4293:ASP:N	1:A:4293:ASP:OD1	2.51	0.42
1:A:1911:GLY:HA3	2:A:4701:ADP:C8	2.54	0.42
1:A:1939:GLN:O	1:A:1943:ARG:HG2	2.19	0.42
1:A:2377:ASN:OD1	3:A:4702:ATP:O2'	2.36	0.42
1:A:2490:ILE:HD13	1:A:2490:ILE:HA	1.88	0.42
1:A:2757:ARG:HA	1:A:2763:ARG:HH21	1.83	0.42
1:A:4277:SER:HA	1:A:4282:PHE:CD1	2.54	0.42
1:A:1697:LYS:O	1:A:1701:TRP:HD1	2.01	0.42
1:A:1884:LEU:HD21	1:A:2041:MET:SD	2.60	0.42
1:A:2275:TRP:HZ2	1:A:2281:THR:HG21	1.85	0.42
1:A:2657:LYS:O	1:A:2705:ARG:NH1	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3126:MET:SD	1:A:3127:PRO:HD2	2.59	0.42
1:A:3945:LYS:HE3	1:A:3945:LYS:HB3	1.83	0.42
1:A:4075:GLU:OE1	1:A:4075:GLU:N	2.41	0.42
1:A:4466:HIS:CD2	1:A:4466:HIS:N	2.87	0.42
1:A:2697:ASP:OD1	1:A:2697:ASP:N	2.53	0.42
1:A:3186:LEU:HD23	1:A:3186:LEU:HA	1.90	0.42
1:A:1724:VAL:O	1:A:1728:GLY:N	2.53	0.42
1:A:2592:VAL:HG12	1:A:2710:GLY:HA3	2.02	0.42
1:A:2723:LEU:HD12	1:A:2723:LEU:H	1.83	0.42
1:A:3001:ASP:CG	1:A:3003:GLY:H	2.28	0.42
1:A:3029:LEU:HD23	1:A:3030:MET:SD	2.60	0.42
1:A:3971:PRO:HG2	1:A:3973:LEU:HD11	2.01	0.42
1:A:4050:ASP:N	1:A:4050:ASP:OD1	2.53	0.42
1:A:1934:GLU:H	1:A:1934:GLU:CD	2.25	0.42
1:A:2029:PRO:HG2	1:A:2032:LEU:HD12	2.02	0.42
1:A:2137:LEU:HD12	1:A:2137:LEU:HA	1.91	0.42
1:A:3129:VAL:HG21	1:A:3149:PHE:HD2	1.84	0.42
1:A:4319:SER:OG	1:A:4325:ASN:OD1	2.22	0.42
1:A:1749:LEU:HD23	1:A:1749:LEU:HA	1.84	0.42
1:A:1903:SER:N	1:A:2037:ARG:O	2.53	0.42
1:A:2922:ILE:HG22	1:A:2950:VAL:HG11	2.00	0.42
1:A:2933:LEU:HD21	1:A:2935:LEU:HG	2.02	0.42
1:A:3502:THR:HB	1:A:3544:ARG:HG2	2.02	0.42
1:A:3876:LEU:HD23	1:A:4146:VAL:HG11	2.02	0.42
1:A:3898:GLU:H	1:A:3898:GLU:CD	2.28	0.42
1:A:4604:VAL:HA	1:A:4625:GLU:HA	2.01	0.42
1:A:2018:MET:HE2	1:A:2018:MET:N	2.35	0.42
1:A:2185:VAL:HG13	1:A:2239:LYS:HD2	2.02	0.42
1:A:2933:LEU:CD2	1:A:2935:LEU:HG	2.50	0.42
1:A:3034:LYS:HE3	1:A:3038:GLN:NE2	2.35	0.42
1:A:2311:TRP:H	1:A:2311:TRP:CD1	2.38	0.41
1:A:2329:ASN:OD1	1:A:2330:GLY:N	2.53	0.41
1:A:3591:ASP:HB3	1:A:3701:PHE:HB2	2.02	0.41
1:A:2074:LYS:HD2	1:A:2074:LYS:HA	1.64	0.41
1:A:3161:LEU:HB3	1:A:3168:THR:HG22	2.01	0.41
1:A:1861:MET:HE1	1:A:1890:LEU:HA	2.02	0.41
1:A:3589:ILE:HA	1:A:3699:VAL:HG23	2.01	0.41
1:A:2142:CYS:O	1:A:2146:VAL:HB	2.19	0.41
1:A:2230:LYS:H	1:A:2230:LYS:HG3	1.62	0.41
1:A:2273:ARG:HE	1:A:2329:ASN:HB2	1.86	0.41
1:A:2443:LEU:HD21	1:A:2510:MET:HG3	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2973:ASP:CG	1:A:3007:ARG:HH12	2.28	0.41
1:A:2996:GLU:HG2	1:A:2997:SER:N	2.36	0.41
1:A:3003:GLY:HA2	1:A:3006:GLU:HG3	2.02	0.41
1:A:3107:LYS:NZ	1:A:3141:GLU:HG2	2.35	0.41
1:A:3508:LEU:HD23	1:A:3536:LEU:HD11	2.01	0.41
1:A:3630:GLY:HA2	1:A:3675:PHE:HB2	2.03	0.41
1:A:4105:TRP:CH2	1:A:4109:LEU:HD22	2.55	0.41
1:A:1626:PHE:HD2	1:A:1629:PHE:CE1	2.37	0.41
1:A:1667:ASN:OD1	1:A:1667:ASN:N	2.53	0.41
1:A:1880:VAL:CG2	1:A:2049:ILE:HG12	2.47	0.41
1:A:2138:ILE:HD12	1:A:2168:VAL:HG22	2.01	0.41
1:A:4028:THR:HA	1:A:4058:LEU:HD11	2.02	0.41
1:A:4095:MET:HE3	1:A:4095:MET:HB3	1.93	0.41
1:A:4287:LYS:HE3	1:A:4291:HIS:HA	2.02	0.41
1:A:2313:GLU:HA	1:A:2316:ASN:HD22	1.85	0.41
1:A:3909:LEU:HD22	1:A:4344:LEU:HB2	2.02	0.41
1:A:3959:ILE:HD12	1:A:3959:ILE:H	1.84	0.41
1:A:4191:GLN:O	1:A:4194:LEU:HB2	2.21	0.41
1:A:1688:THR:OG1	1:A:1708:GLU:OE2	2.39	0.41
1:A:1722:THR:O	1:A:1725:GLU:HG3	2.20	0.41
1:A:1943:ARG:HA	1:A:1946:VAL:HG12	2.02	0.41
1:A:2665:GLU:HB3	1:A:2668:LEU:HB3	2.02	0.41
1:A:2673:LYS:H	1:A:2673:LYS:HG2	1.55	0.41
1:A:2726:ARG:HE	3:A:4702:ATP:PG	2.42	0.41
1:A:3546:ASP:OD1	1:A:3546:ASP:N	2.53	0.41
1:A:3715:GLU:OE1	1:A:3718:LYS:NZ	2.53	0.41
1:A:3854:GLN:O	1:A:3858:ILE:HG12	2.21	0.41
1:A:4377:MET:HE1	1:A:4437:VAL:HG12	2.01	0.41
1:A:1652:LYS:HD2	1:A:1652:LYS:HA	1.78	0.41
1:A:2538:GLU:HB3	1:A:2548:TRP:NE1	2.36	0.41
1:A:2652:PRO:HD2	1:A:2705:ARG:CZ	2.51	0.41
1:A:2683:ILE:HG22	1:A:2727:PHE:HE1	1.86	0.41
1:A:3497:LYS:HD2	1:A:3497:LYS:HA	1.83	0.41
1:A:4381:HIS:HB2	1:A:4438:CYS:HB3	2.02	0.41
1:A:4578:SER:O	1:A:4638:ARG:NH2	2.54	0.41
1:A:2231:SER:HA	1:A:2234:TRP:CD1	2.56	0.41
1:A:2258:ALA:HB1	1:A:2682:PHE:HD2	1.86	0.41
1:A:2612:LEU:CD2	1:A:2613:PRO:HD2	2.51	0.41
1:A:2818:VAL:O	1:A:2822:ILE:HG12	2.21	0.41
1:A:2873:TYR:O	1:A:2920:LEU:HD13	2.20	0.41
1:A:3067:THR:O	1:A:3068:MET:HE2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:3509:LEU:HD23	1:A:3509:LEU:HA	1.87	0.41
1:A:3595:GLN:H	1:A:3595:GLN:HG3	1.71	0.41
1:A:3704:THR:HG22	1:A:3706:SER:H	1.86	0.41
1:A:3904:GLU:OE1	1:A:3904:GLU:N	2.45	0.41
1:A:4069:ILE:O	1:A:4096:LEU:HA	2.20	0.41
1:A:2385:ILE:HA	1:A:2386:PRO:HD3	1.95	0.41
1:A:2507:ARG:O	1:A:2511:ARG:HG3	2.21	0.41
1:A:3171:ILE:HD13	1:A:3171:ILE:HA	1.87	0.41
1:A:2322:ASN:HB3	1:A:2324:LEU:HD23	2.03	0.40
1:A:2835:ASP:OD1	1:A:2835:ASP:C	2.63	0.40
1:A:2976:LEU:HD23	1:A:2976:LEU:HA	1.95	0.40
1:A:4086:THR:O	1:A:4090:SER:OG	2.36	0.40
1:A:4528:VAL:HG11	1:A:4592:TRP:HB2	2.04	0.40
1:A:2191:LEU:HA	1:A:2191:LEU:HD13	1.85	0.40
1:A:2238:LEU:HD12	1:A:2300:TRP:CE3	2.56	0.40
1:A:2259:ILE:HG12	1:A:2263:HIS:HB2	2.02	0.40
1:A:2369:LEU:HD21	3:A:4702:ATP:C5	2.56	0.40
1:A:2412:MET:O	1:A:2415:ILE:HG22	2.22	0.40
1:A:2453:ARG:NH2	1:A:2505:ASP:OD2	2.53	0.40
1:A:4581:ILE:HD12	1:A:4581:ILE:HA	1.88	0.40
1:A:1792:LEU:HD11	1:A:1811:LEU:HG	2.04	0.40
1:A:2053:MET:HE2	1:A:2053:MET:HB2	1.83	0.40
1:A:2113:ARG:HA	1:A:2113:ARG:NE	2.36	0.40
1:A:3164:ARG:HH21	1:A:4374:PRO:N	2.18	0.40
1:A:4517:PRO:HG2	1:A:4619:ILE:HD12	2.03	0.40
1:A:1797:LEU:HD12	1:A:1797:LEU:HA	1.84	0.40
1:A:2232:MET:O	1:A:2236:VAL:HG12	2.22	0.40
1:A:3703:VAL:HG21	1:A:3829:LEU:HD22	2.02	0.40
1:A:3931:GLN:O	1:A:3935:VAL:HG12	2.21	0.40
1:A:3938:LEU:HD11	1:A:3991:LEU:HB3	2.03	0.40
1:A:2093:LEU:HD12	1:A:2093:LEU:HA	1.97	0.40
1:A:2184:LYS:HB2	1:A:2184:LYS:HE3	1.97	0.40
1:A:2279:LEU:HD11	1:A:2693:TYR:CG	2.57	0.40
1:A:2285:ARG:NH2	1:A:2331:GLU:OE1	2.47	0.40
1:A:2718:PRO:CB	1:A:3080:ALA:HA	2.52	0.40
1:A:3167:ARG:NH2	1:A:3686:VAL:O	2.52	0.40
1:A:3984:GLY:O	1:A:3988:HIS:ND1	2.54	0.40
1:A:4035:VAL:HG23	1:A:4143:ARG:HD3	2.04	0.40
1:A:4071:ILE:HG23	1:A:4077:PHE:HE1	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	2699/4646 (58%)	2641 (98%)	58 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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	2407/4125 (58%)	2397 (100%)	10 (0%)	84	81

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1815	LEU
1	A	1926	PHE
1	A	2253	ILE
1	A	2263	HIS
1	A	2367	ASP
1	A	2632	LEU
1	A	3610	THR
1	A	4106	LEU
1	A	4339	MET
1	A	4509	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1790	ASN
1	A	1974	GLN
1	A	2051	GLN
1	A	2134	GLN
1	A	2271	ASN
1	A	2282	HIS
1	A	2414	GLN
1	A	2464	GLN
1	A	2482	GLN
1	A	2491	GLN
1	A	2654	GLN
1	A	2677	GLN
1	A	2689	HIS
1	A	2730	HIS
1	A	2849	ASN
1	A	2857	HIS
1	A	3135	GLN
1	A	3139	HIS
1	A	3602	ASN
1	A	3650	ASN
1	A	3772	ASN
1	A	3830	GLN
1	A	3845	ASN
1	A	3952	GLN
1	A	4012	ASN
1	A	4062	GLN
1	A	4249	GLN
1	A	4262	GLN
1	A	4508	HIS
1	A	4566	GLN
1	A	4573	ASN
1	A	4589	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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

4 ligands are modelled in this entry.

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	4704	-	28,29,29	1.40	5 (17%)	43,45,45	1.81	9 (20%)
2	ADP	A	4703	-	28,29,29	1.41	5 (17%)	43,45,45	1.87	11 (25%)
3	ATP	A	4702	-	32,33,33	0.31	0	48,52,52	0.30	0
2	ADP	A	4701	-	28,29,29	1.37	4 (14%)	43,45,45	1.82	9 (20%)

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	4704	-	-	5/16/32/32	0/3/3/3
2	ADP	A	4703	-	-	5/16/32/32	0/3/3/3
3	ATP	A	4702	-	-	0/22/38/38	0/3/3/3
2	ADP	A	4701	-	-	1/16/32/32	0/3/3/3

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	4704	ADP	C5-C4	4.64	1.47	1.39
2	A	4703	ADP	C5-C4	4.59	1.47	1.39
2	A	4701	ADP	C5-C4	4.58	1.47	1.39
2	A	4703	ADP	C5-C6	2.71	1.48	1.41
2	A	4704	ADP	C5-C6	2.59	1.48	1.41
2	A	4701	ADP	C5-C6	2.48	1.47	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	4701	ADP	C5-N7	-2.42	1.34	1.39
2	A	4704	ADP	C5-N7	-2.38	1.34	1.39
2	A	4704	ADP	C8-N7	2.31	1.36	1.31
2	A	4703	ADP	C8-N7	2.29	1.36	1.31
2	A	4703	ADP	C5-N7	-2.29	1.34	1.39
2	A	4701	ADP	C8-N7	2.17	1.35	1.31
2	A	4703	ADP	PA-O3A	2.12	1.61	1.59
2	A	4704	ADP	C4-N9	-2.01	1.33	1.37

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	4703	ADP	C5-C4-N3	-5.93	118.56	126.72
2	A	4701	ADP	C5-C4-N3	-5.70	118.87	126.72
2	A	4704	ADP	C5-C4-N3	-5.59	119.02	126.72
2	A	4703	ADP	N3-C4-N9	4.66	135.10	127.17
2	A	4701	ADP	N3-C4-N9	4.63	135.04	127.17
2	A	4704	ADP	N3-C4-N9	4.42	134.68	127.17
2	A	4703	ADP	C2-N3-C4	3.78	121.06	111.83
2	A	4704	ADP	C2-N3-C4	3.60	120.63	111.83
2	A	4701	ADP	C2-N3-C4	3.58	120.58	111.83
2	A	4703	ADP	C4-C5-N7	-3.51	106.57	110.58
2	A	4704	ADP	C4-C5-N7	-3.45	106.64	110.58
2	A	4701	ADP	N3-C2-N1	-3.33	123.54	128.58
2	A	4703	ADP	N3-C2-N1	-3.29	123.60	128.58
2	A	4704	ADP	N3-C2-N1	-3.25	123.66	128.58
2	A	4701	ADP	C4-C5-N7	-3.21	106.91	110.58
2	A	4703	ADP	C3'-C2'-C1'	2.71	106.59	101.46
2	A	4704	ADP	C4-N9-C8	2.68	108.56	105.74
2	A	4703	ADP	C4-N9-C8	2.66	108.53	105.74
2	A	4701	ADP	C4-N9-C8	2.63	108.50	105.74
2	A	4703	ADP	C5-N7-C8	2.57	107.49	103.45
2	A	4704	ADP	C5-N7-C8	2.47	107.33	103.45
2	A	4701	ADP	C5-N7-C8	2.30	107.07	103.45
2	A	4704	ADP	C3'-C2'-C1'	2.26	105.74	101.46
2	A	4704	ADP	C6-C5-N7	2.14	136.21	132.09
2	A	4701	ADP	C2-N1-C6	2.13	122.23	118.73
2	A	4701	ADP	C3'-C2'-C1'	2.12	105.47	101.46
2	A	4703	ADP	C6-C5-N7	2.09	136.12	132.09
2	A	4703	ADP	C2'-C1'-N9	-2.03	108.27	113.30
2	A	4703	ADP	N9-C8-N7	-2.02	111.07	113.94

There are no chirality outliers.

All (11) torsion outliers are listed below:

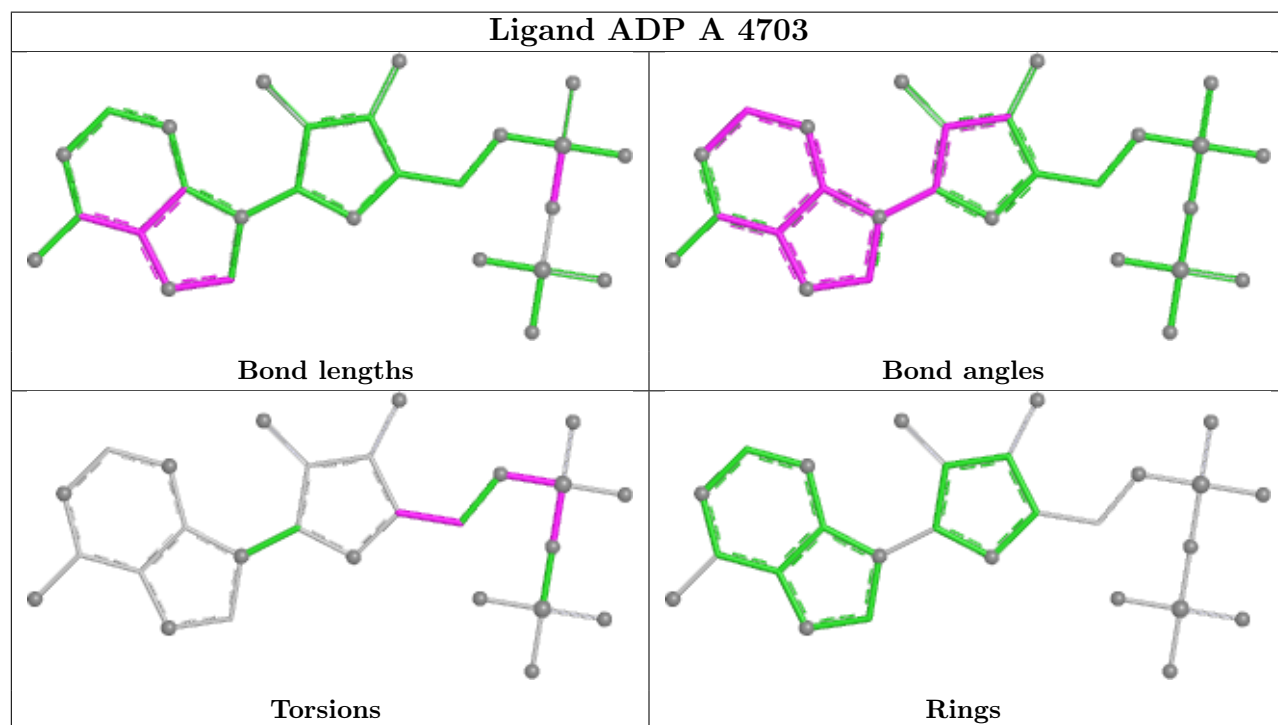
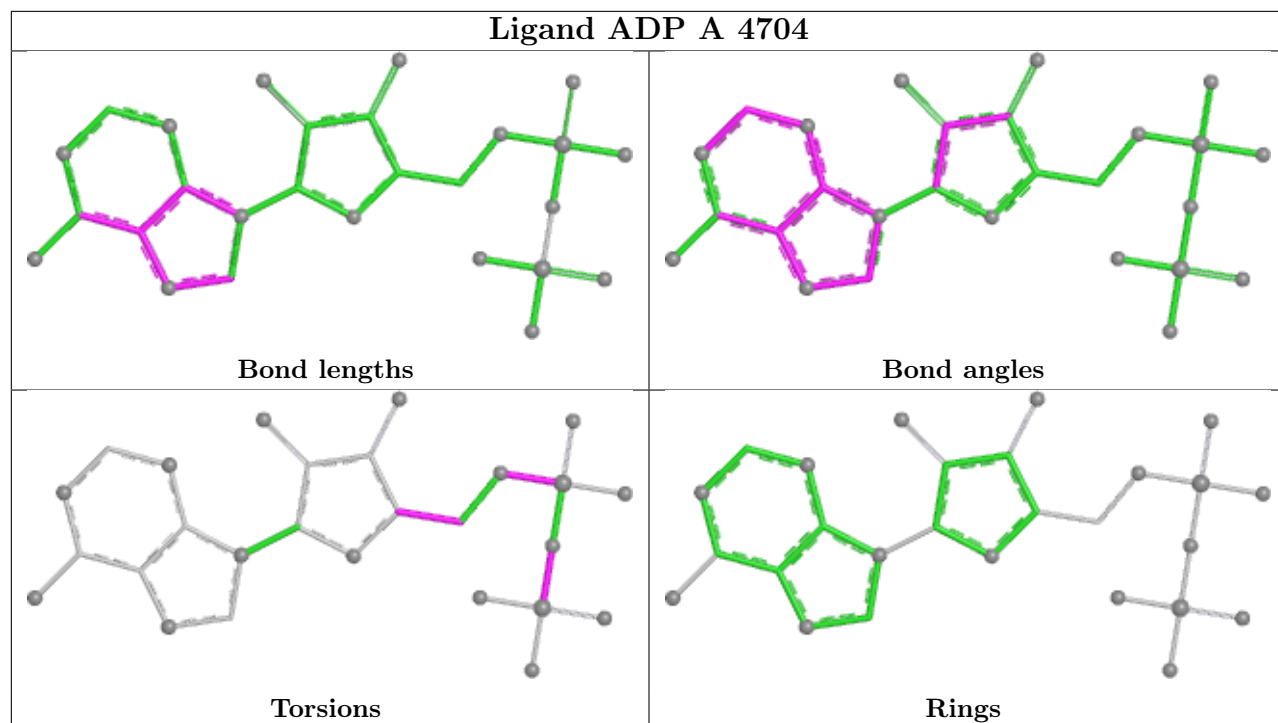
Mol	Chain	Res	Type	Atoms
2	A	4703	ADP	C5'-O5'-PA-O2A
2	A	4704	ADP	C5'-O5'-PA-O3A
2	A	4704	ADP	O4'-C4'-C5'-O5'
2	A	4704	ADP	C3'-C4'-C5'-O5'
2	A	4703	ADP	O4'-C4'-C5'-O5'
2	A	4703	ADP	C3'-C4'-C5'-O5'
2	A	4704	ADP	PA-O3A-PB-O1B
2	A	4701	ADP	C5'-O5'-PA-O1A
2	A	4704	ADP	C5'-O5'-PA-O1A
2	A	4703	ADP	PB-O3A-PA-O2A
2	A	4703	ADP	PB-O3A-PA-O1A

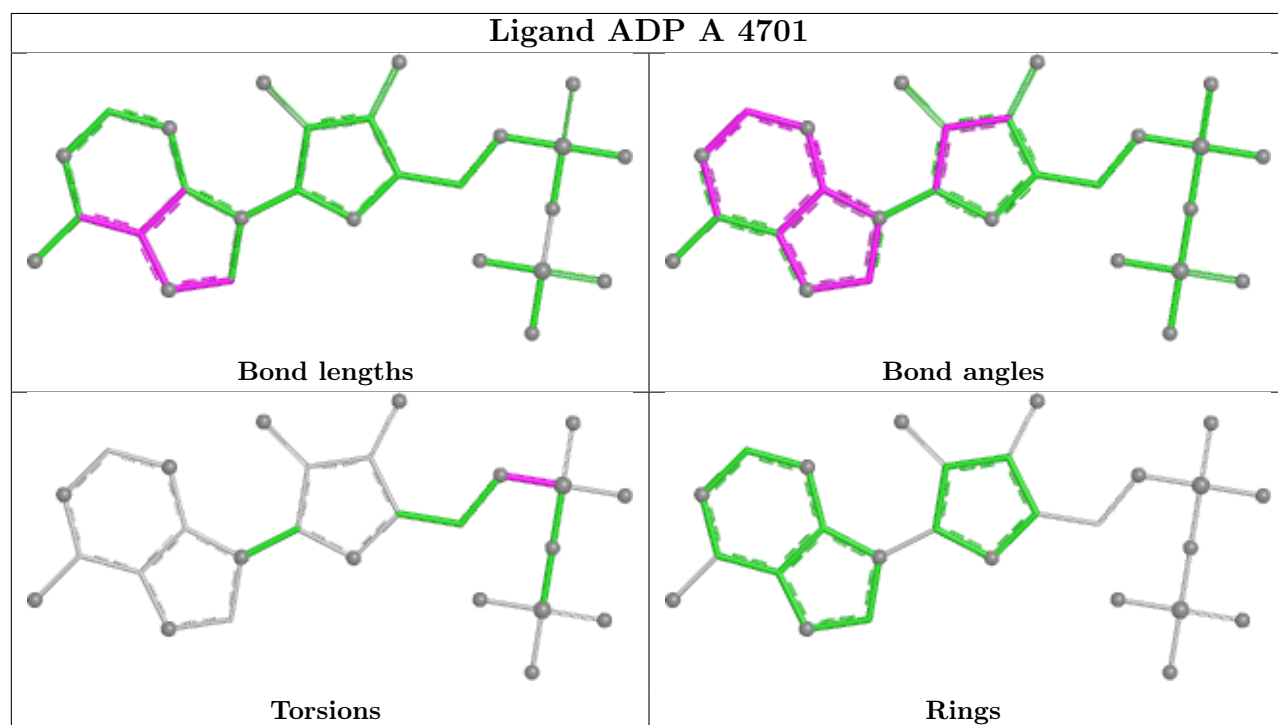
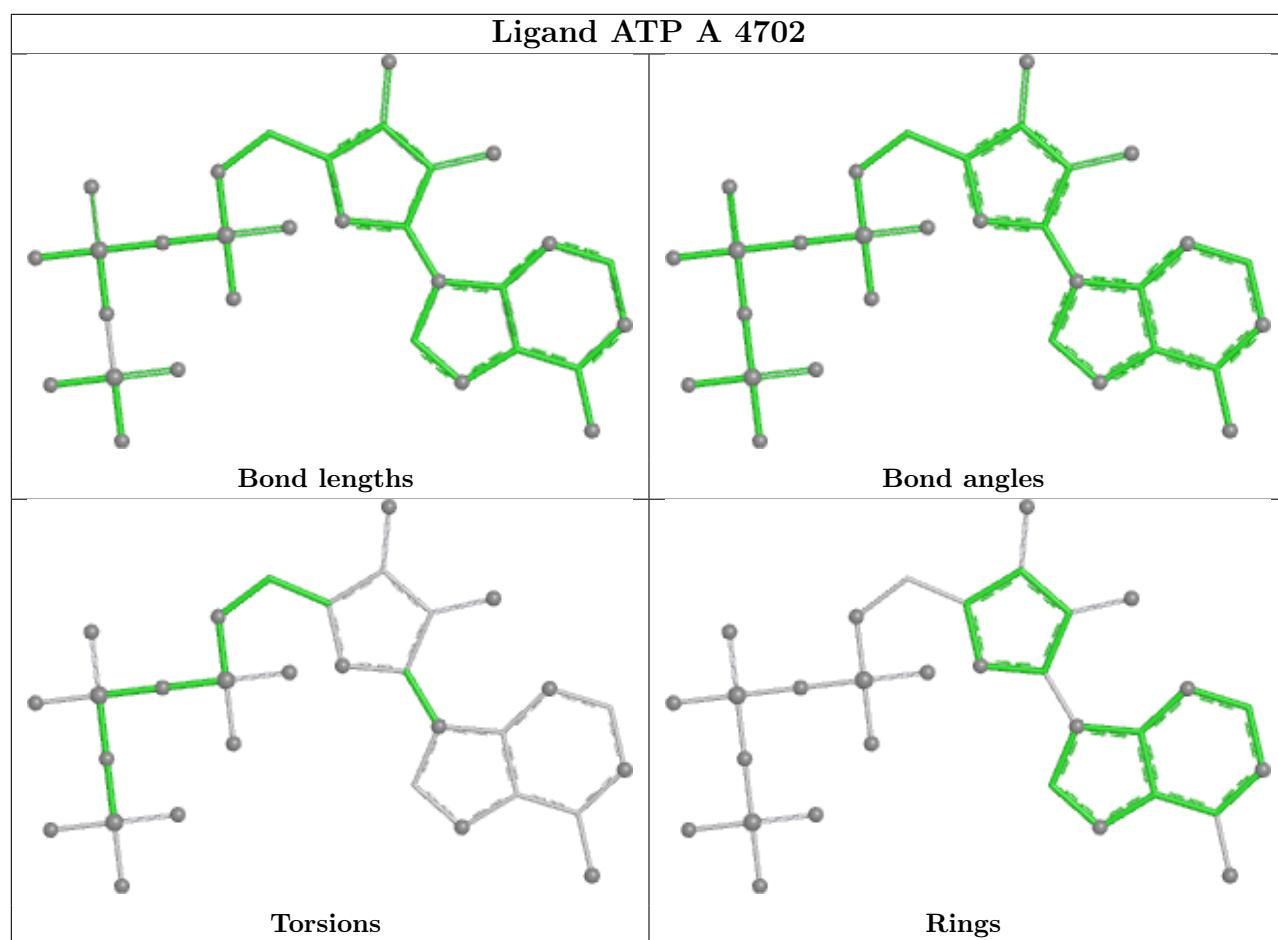
There are no ring outliers.

3 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	4703	ADP	3	0
3	A	4702	ATP	7	0
2	A	4701	ADP	6	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 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.





5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

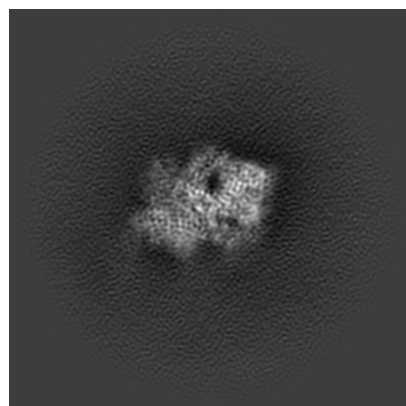
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-44705. These allow visual inspection of the internal detail of the map and identification of artifacts.

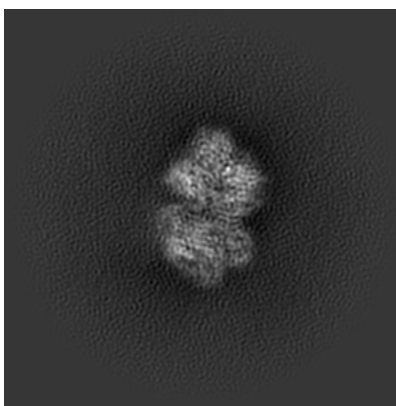
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

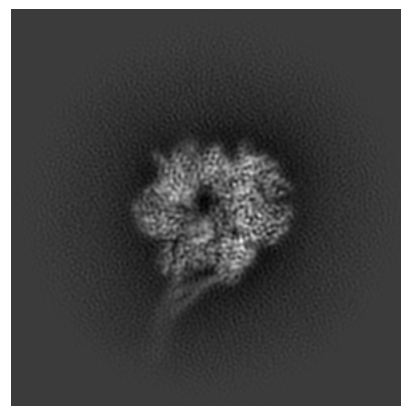
6.1.1 Primary map



X

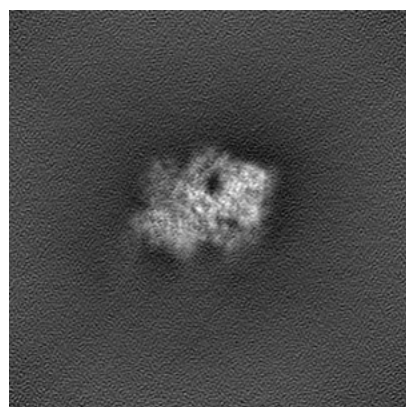


Y

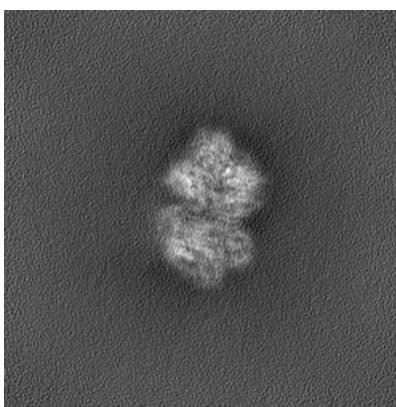


Z

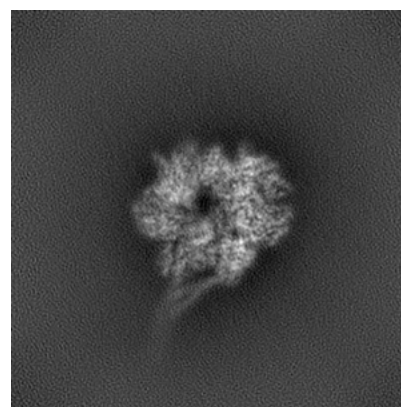
6.1.2 Raw map



X



Y

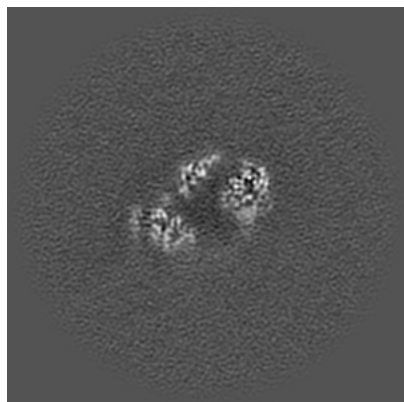


Z

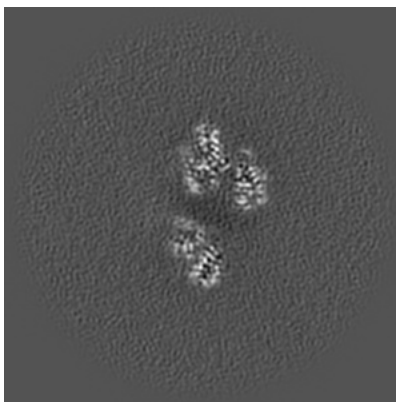
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

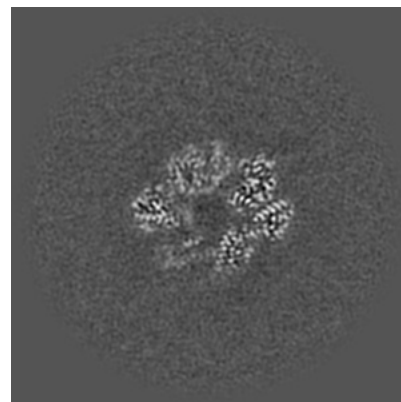
6.2.1 Primary map



X Index: 128

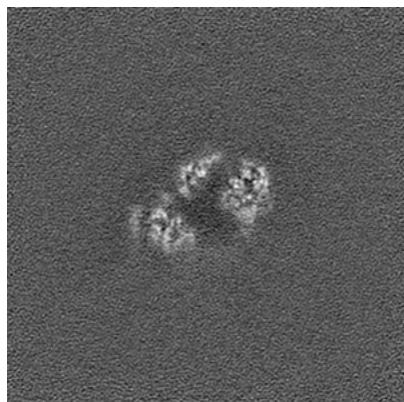


Y Index: 128

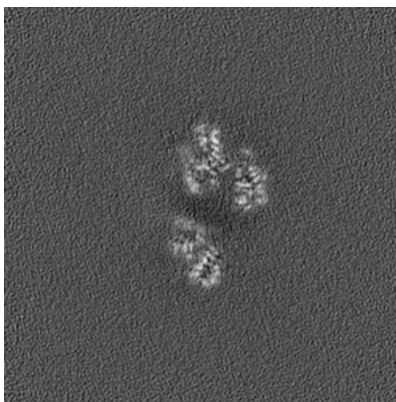


Z Index: 128

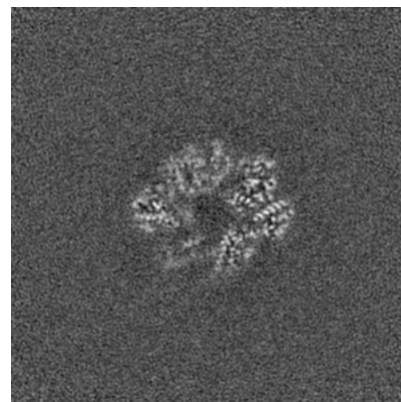
6.2.2 Raw map



X Index: 128



Y Index: 128

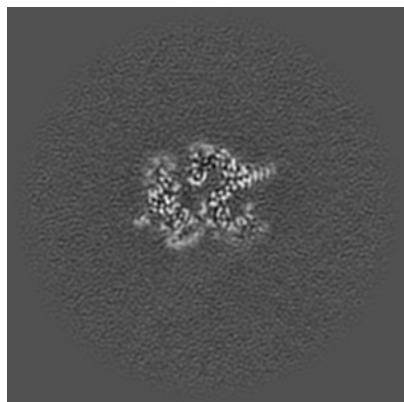


Z Index: 128

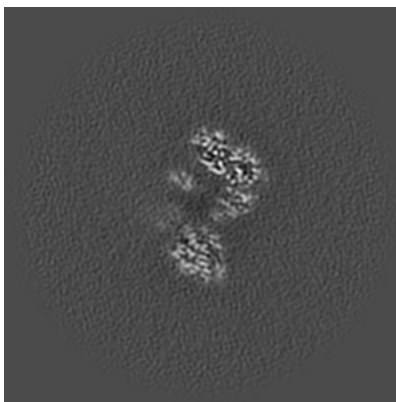
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

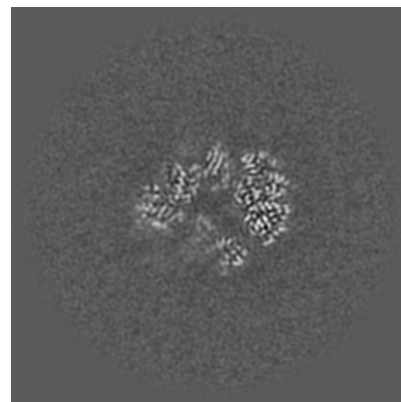
6.3.1 Primary map



X Index: 146

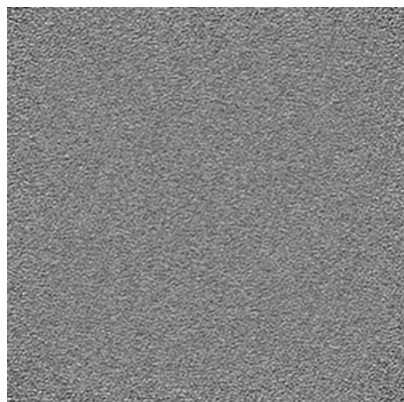


Y Index: 120

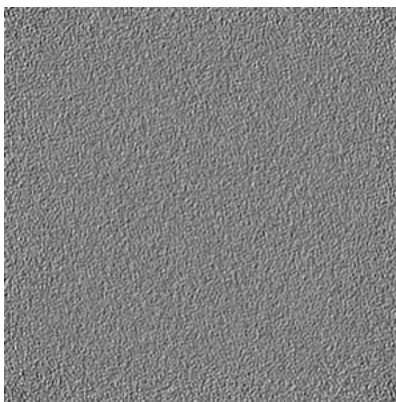


Z Index: 135

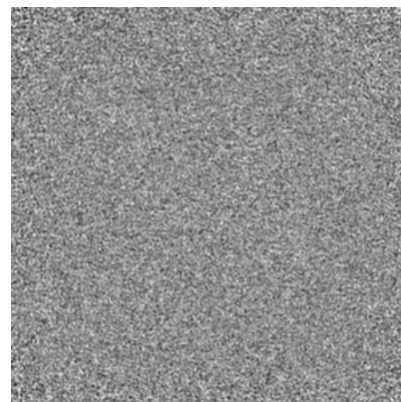
6.3.2 Raw map



X Index: 0



Y Index: 0

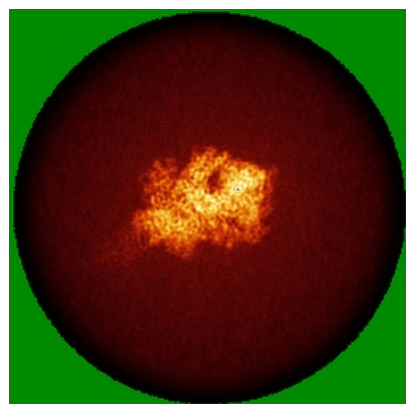


Z Index: 0

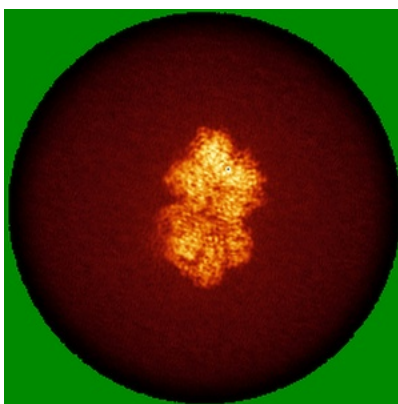
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

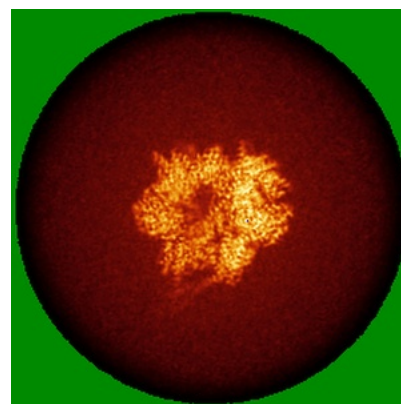
6.4.1 Primary map



X

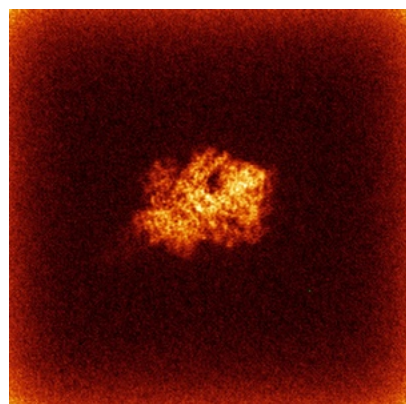


Y

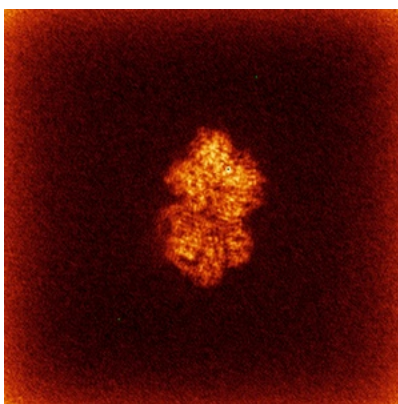


Z

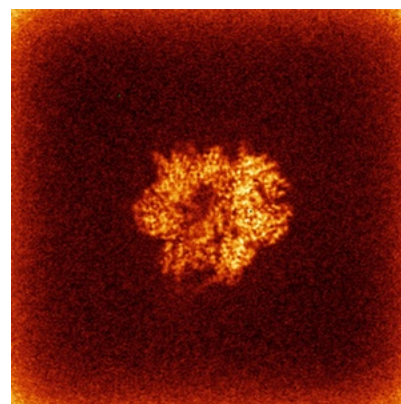
6.4.2 Raw map



X



Y

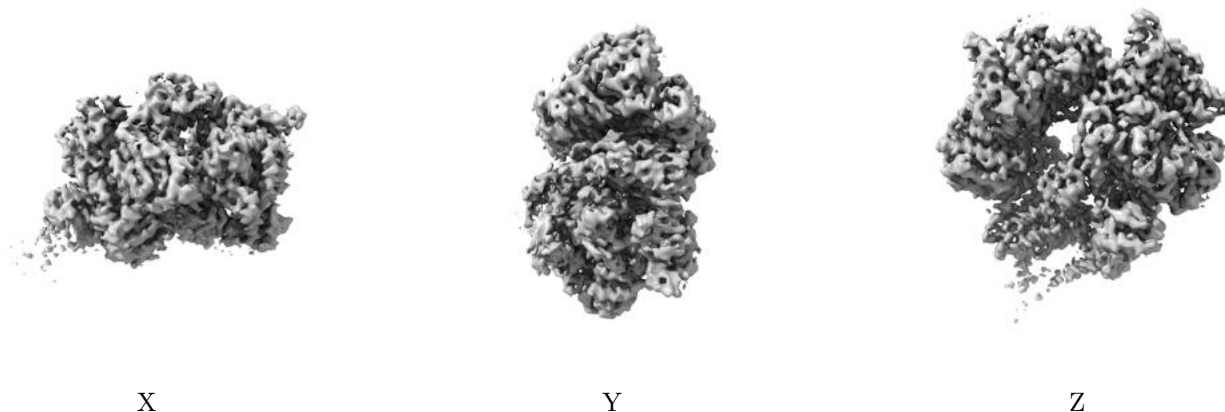


Z

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.

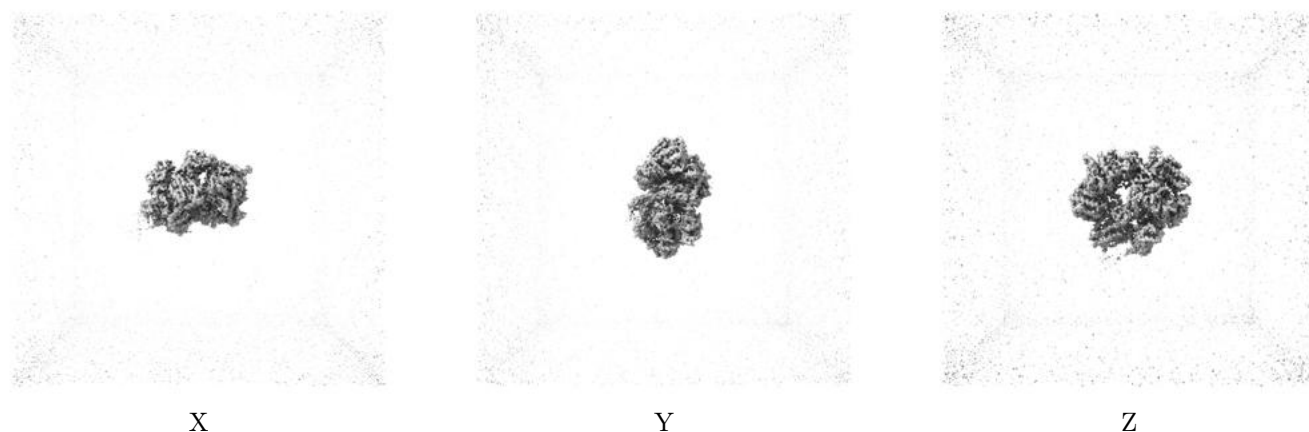
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.2. 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



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.

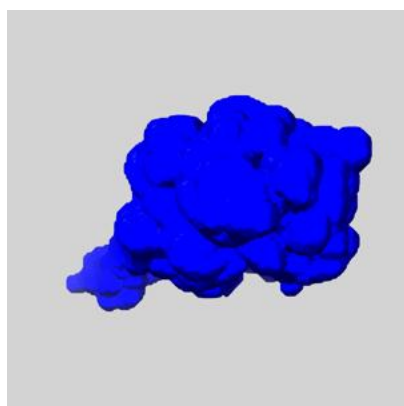
6.6 Mask visualisation [i](#)

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

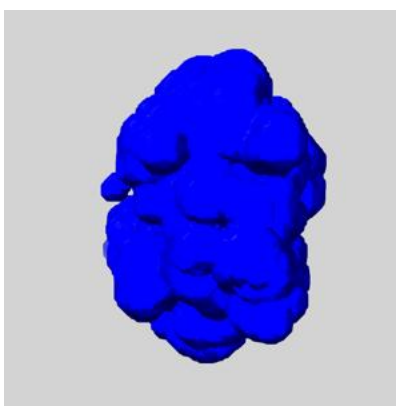
A mask typically either:

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

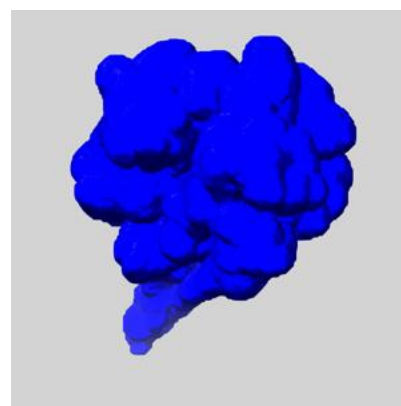
6.6.1 emd_44705_msk_1.map [i](#)



X



Y

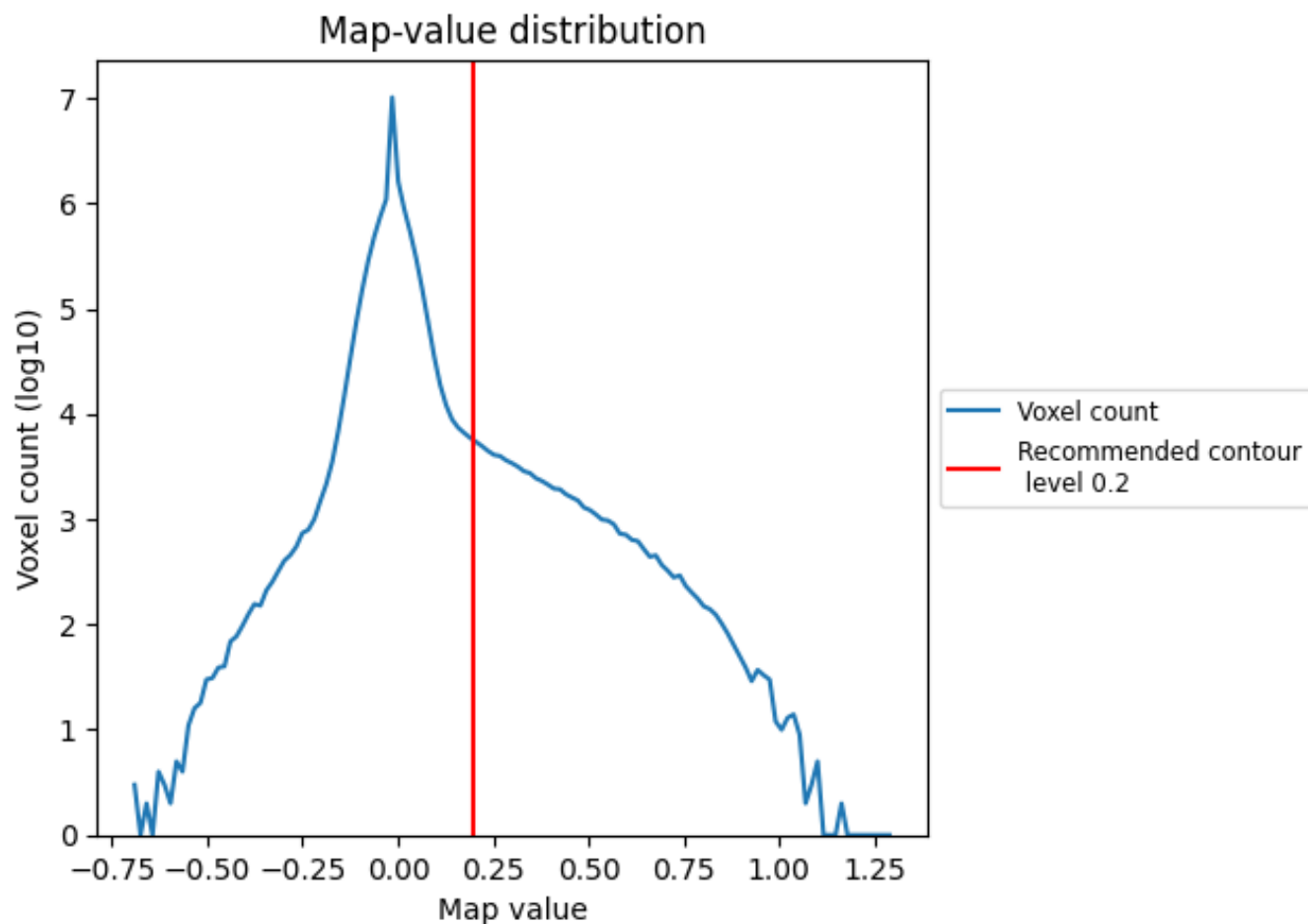


Z

7 Map analysis [i](#)

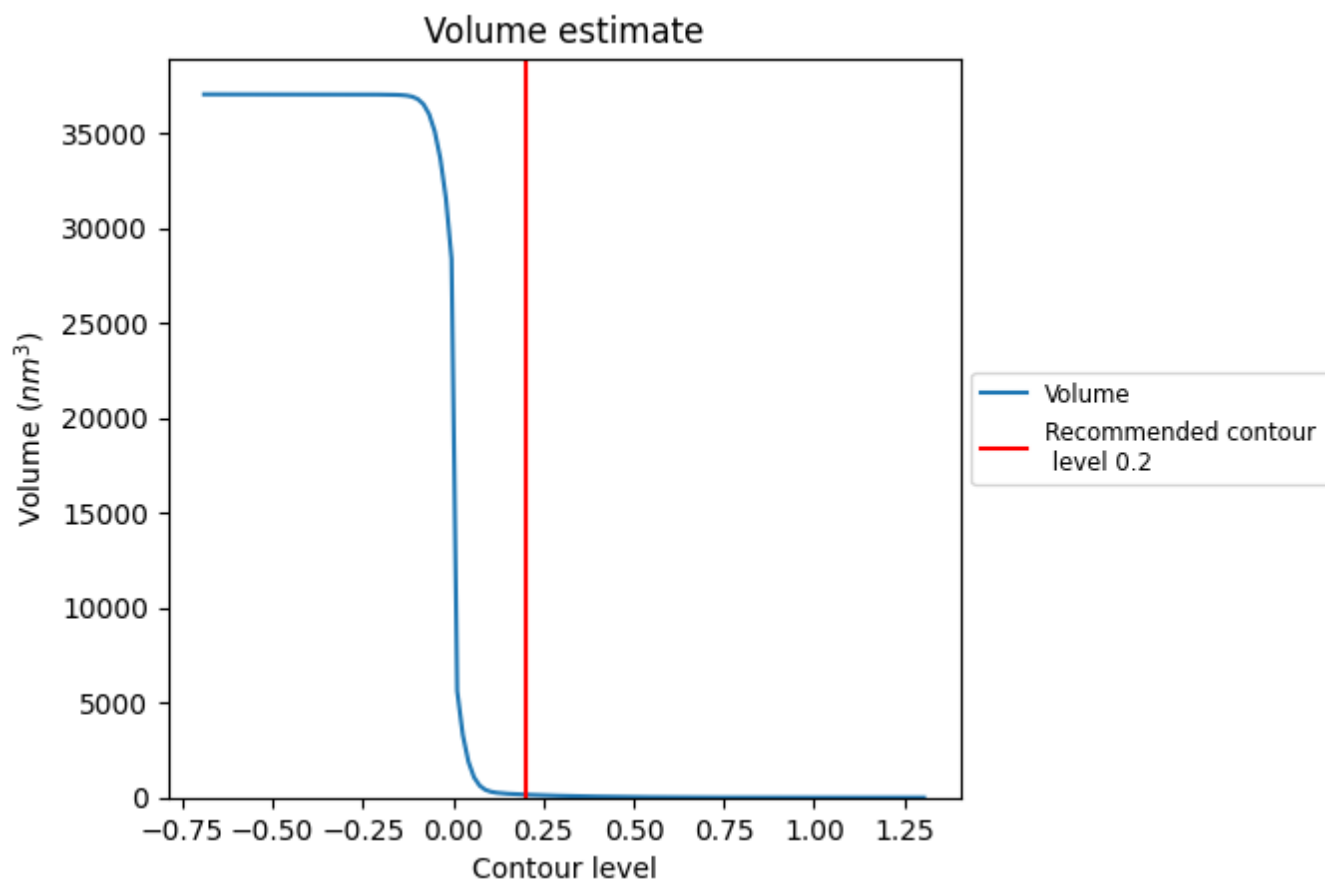
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

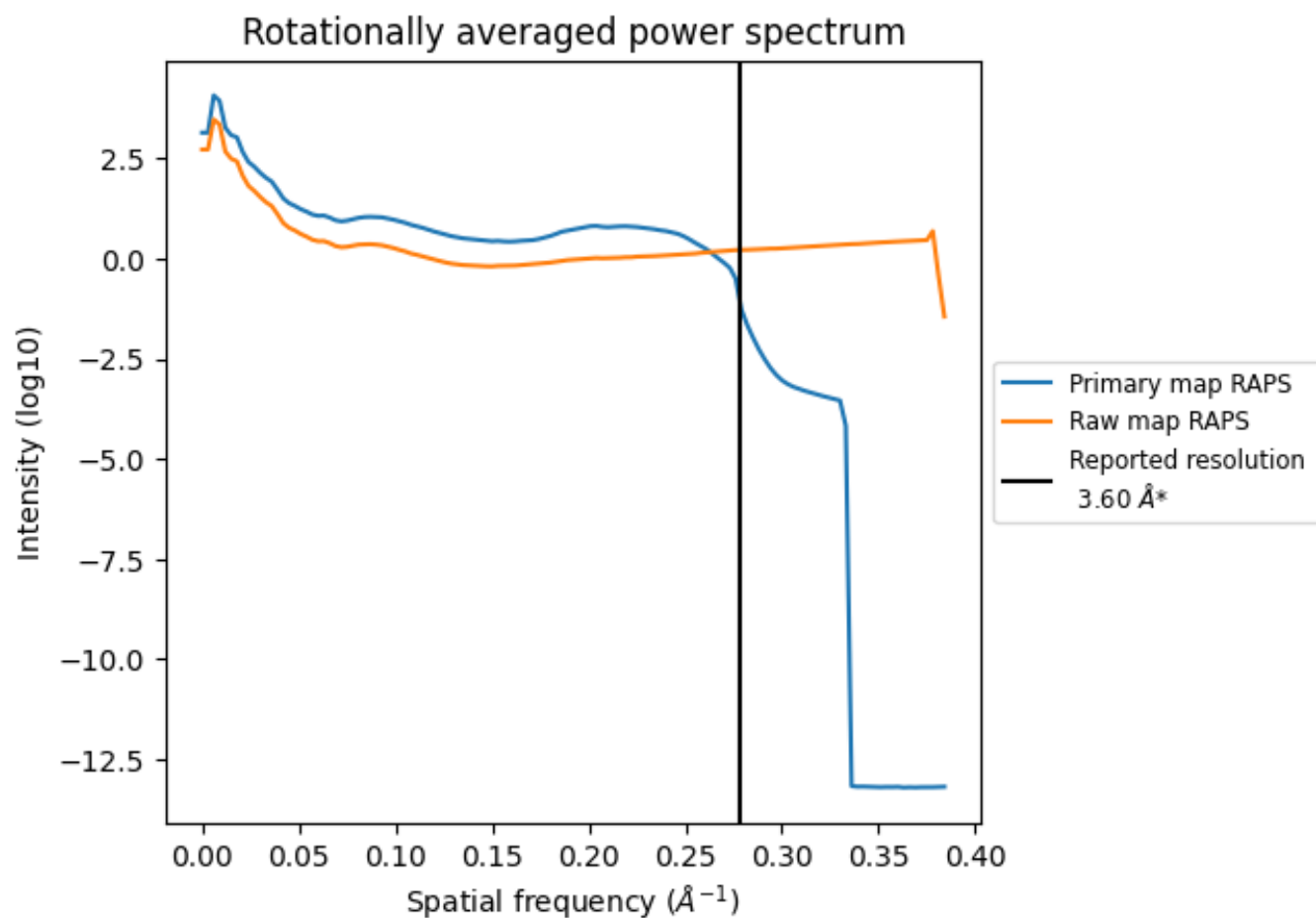
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 154 nm³; this corresponds to an approximate mass of 139 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 ⓘ

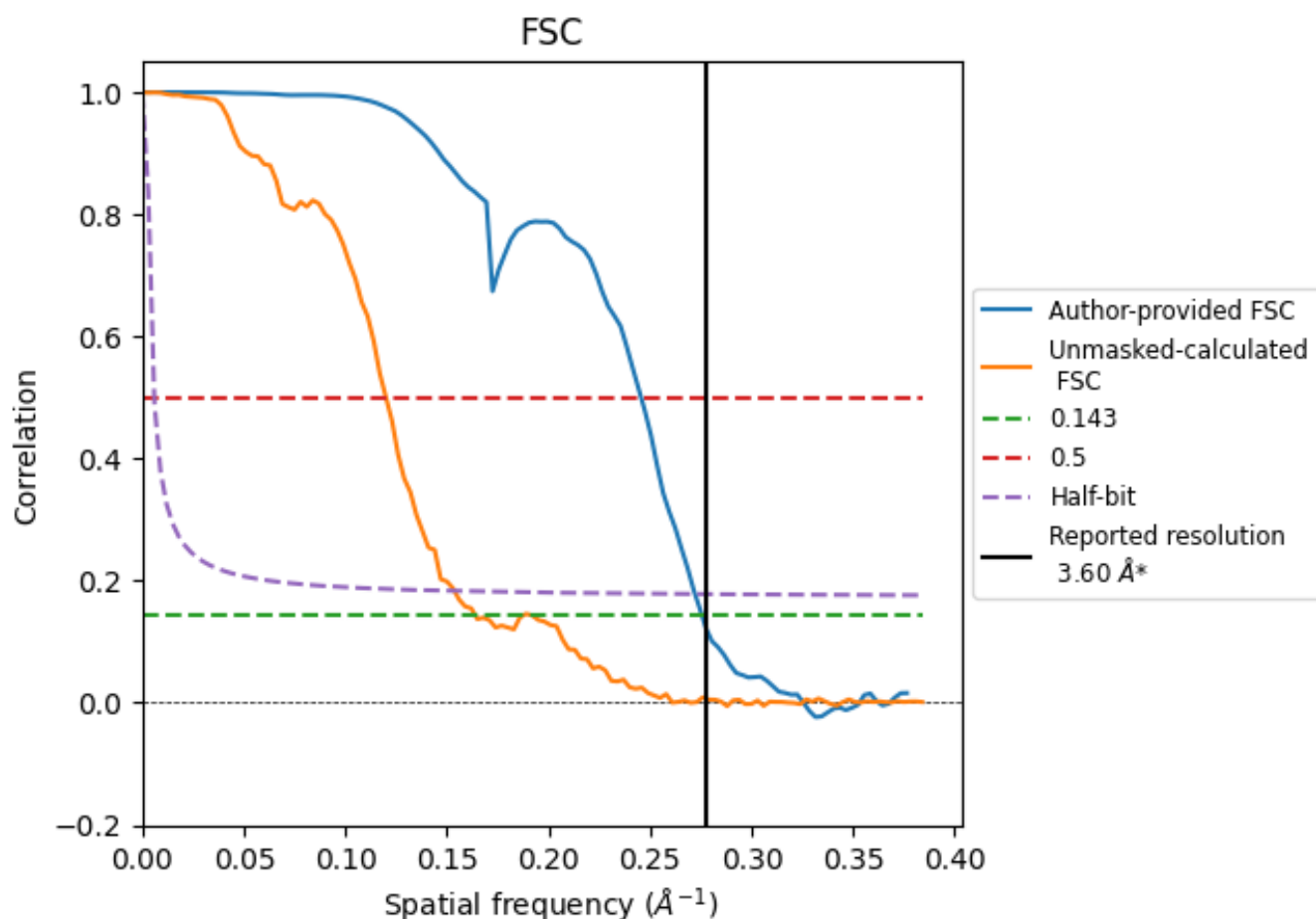


*Reported resolution corresponds to spatial frequency of 0.278 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



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

8.2 Resolution estimates [i](#)

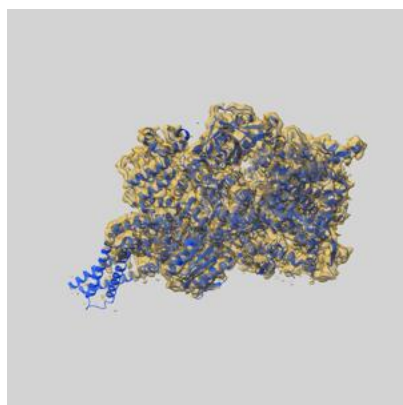
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.63	4.07	3.67
Unmasked-calculated*	6.10	8.33	6.51

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

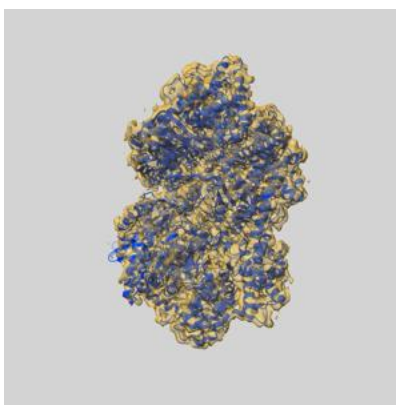
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-44705 and PDB model 9BMO. Per-residue inclusion information can be found in section [3](#) on page [5](#).

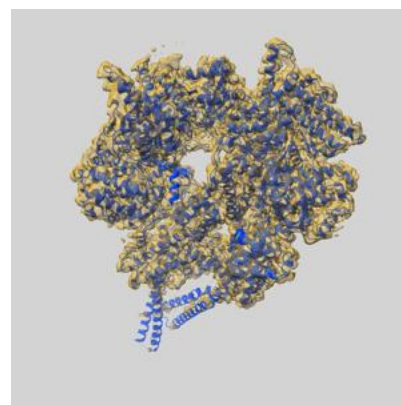
9.1 Map-model overlay [i](#)



X



Y



Z

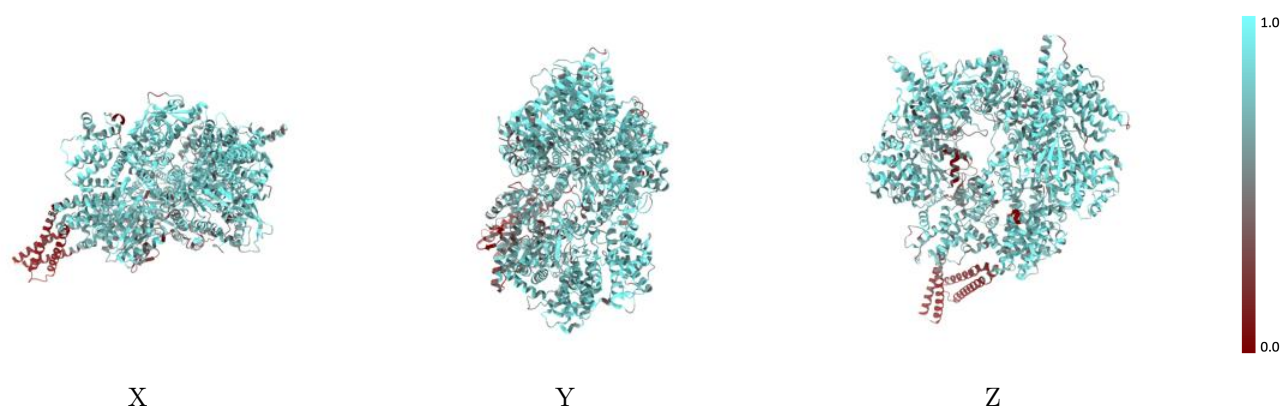
The images above show the 3D surface view of the map at the recommended contour level 0.2 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



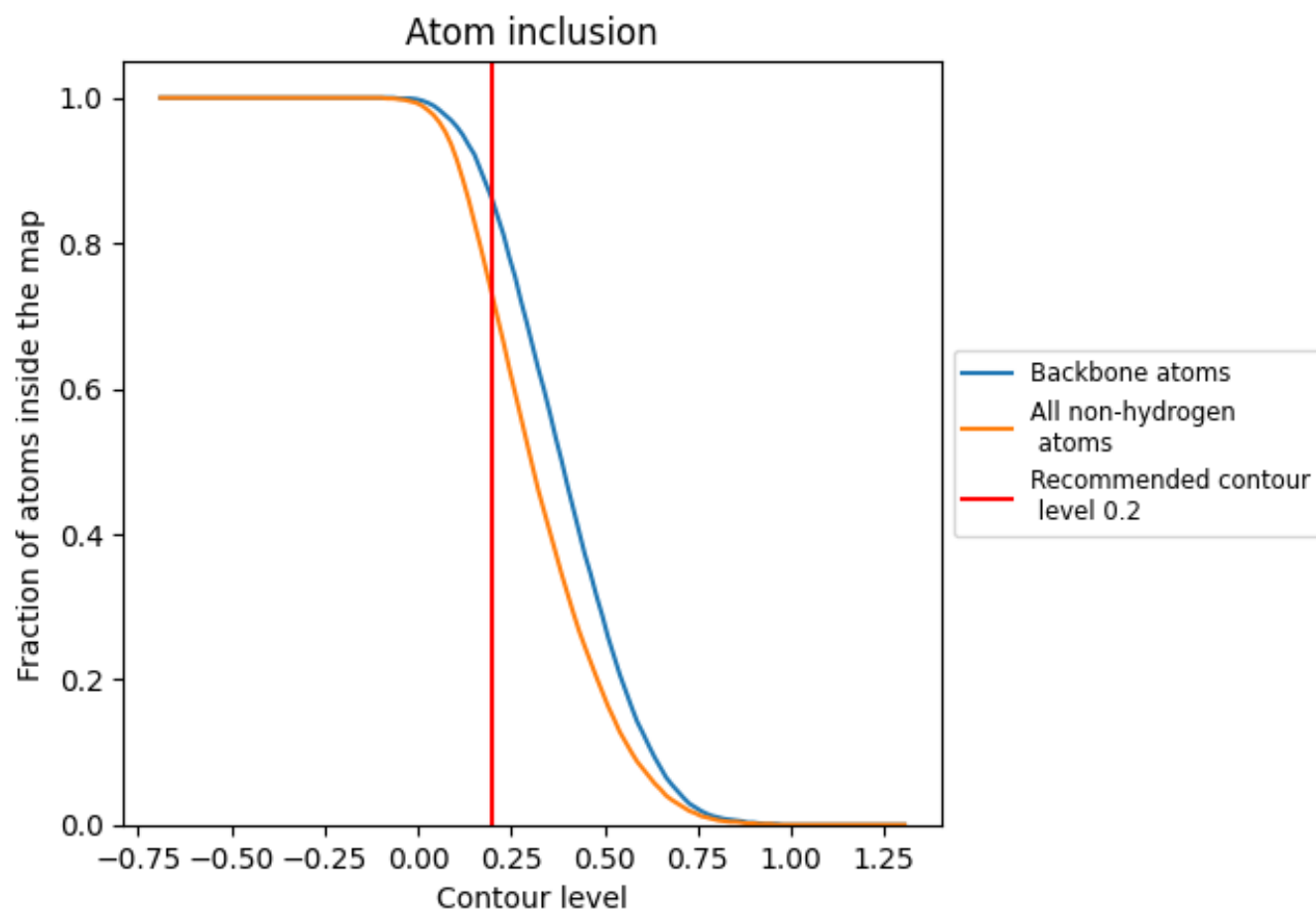
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



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 (0.2).

9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 73% 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 (0.2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	<div></div> 0.7280	<div></div> 0.3970
A	<div></div> 0.7280	<div></div> 0.3970

