



wwPDB EM Validation Summary Report ⓘ

Jun 3, 2023 – 02:14 pm BST

PDB ID : 8BHV
EMDB ID : EMD-16070
Title : DNA-PK XLF mediated dimer bound to PAXX
Authors : Hardwick, S.W.; Chaplin, A.K.
Deposited on : 2022-11-01
Resolution : 4.51 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ 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.dev50
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.33

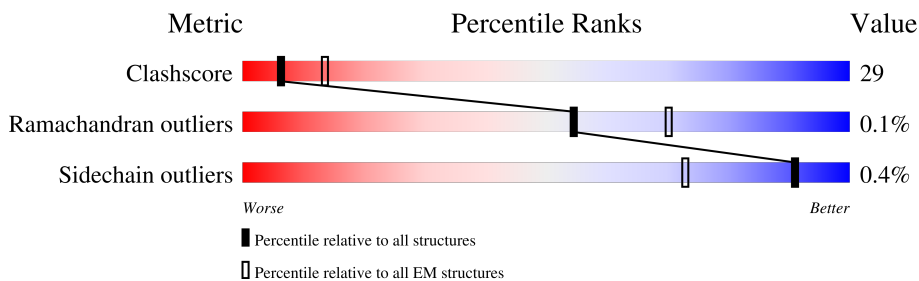
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.51 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	4128	41% (green), 45% (yellow), 14% (grey)
1	F	4128	41% (green), 45% (yellow), 14% (grey)
2	K	336	11% (red), 28% (green), 32% (yellow), 40% (grey)
2	L	336	19% (red), 28% (green), 29% (yellow), 42% (grey)
2	N	336	6% (red), 29% (green), 30% (yellow), 40% (grey)
2	O	336	16% (red), 23% (green), 35% (yellow), 42% (grey)
3	M	911	11% (green), 17% (yellow), 72% (grey)
3	P	911	13% (green), 14% (yellow), 73% (grey)

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Mol	Chain	Length	Quality of chain
4	Q	299	 11% 30% 42% 27%
4	R	299	 12% 28% 46% 25%
5	a	609	 83% 17%
5	h	609	 83% 17%
6	b	732	 5% 89% 11%
6	j	732	 87% 13%
7	c	204	 11% 89%
7	i	204	 11% 89%
8	D	27	 19% 67% 15%
9	E	28	 100%
10	I	24	 8% 92%
11	J	24	 25% 71%

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 91357 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 DNA-dependent protein kinase catalytic subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	3549	Total	C	N	O	S	0	0
			28250	18146	4783	5134	187		
1	F	3543	Total	C	N	O	S	0	0
			28263	18162	4780	5132	189		

- Molecule 2 is a protein called DNA repair protein XRCC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	K	201	Total	C	N	O	S	0	0
			1628	1031	278	312	7		
2	L	195	Total	C	N	O	S	0	0
			1589	1009	271	302	7		
2	N	201	Total	C	N	O	S	0	0
			1625	1030	278	310	7		
2	O	194	Total	C	N	O	S	0	0
			1589	1009	271	302	7		

- Molecule 3 is a protein called DNA ligase 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	M	258	Total	C	N	O	S	0	0
			2085	1327	349	396	13		
3	P	246	Total	C	N	O	S	0	0
			1983	1261	339	371	12		

- Molecule 4 is a protein called Non-homologous end-joining factor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	Q	218	Total	C	N	O	S	0	0
			1745	1119	294	319	13		
4	R	225	Total	C	N	O	S	0	0
			1796	1150	301	330	15		

- Molecule 5 is a protein called X-ray repair cross-complementing protein 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	a	505	Total	C	N	O	S	0	0
			4038	2583	691	747	17		
5	h	505	Total	C	N	O	S	0	0
			4026	2578	681	750	17		

- Molecule 6 is a protein called X-ray repair cross-complementing protein 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	b	650	Total	C	N	O	S	0	0
			5214	3328	876	985	25		
6	j	636	Total	C	N	O	S	0	0
			5082	3252	854	951	25		

- Molecule 7 is a protein called Protein PAXX.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	c	23	Total	C	N	O	S	0	0
			165	105	27	32	1		
7	i	23	Total	C	N	O	S	0	0
			162	102	27	32	1		

- Molecule 8 is a DNA chain called DNA (26-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
8	D	27	Total	C	N	O	P	0	0
			556	268	95	166	27		

- Molecule 9 is a DNA chain called DNA (27-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
9	E	28	Total	C	N	O	P	0	0
			576	277	107	164	28		

- Molecule 10 is a DNA chain called DNA (28-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
10	I	24	Total	C	N	O	P	0	0
			494	238	92	140	24		

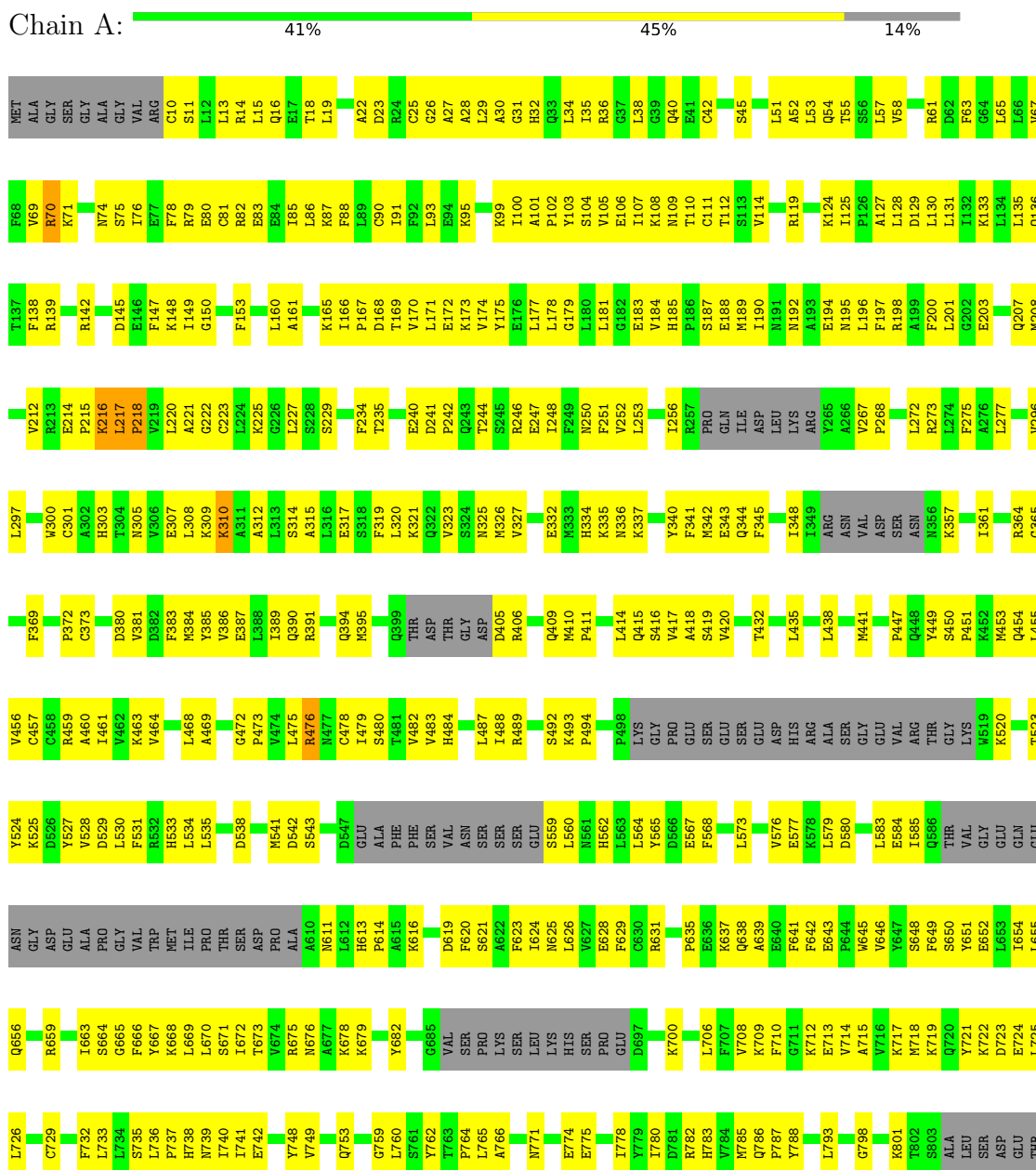
- Molecule 11 is a DNA chain called DNA (24-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
11	J	24	491	239	79	149	24	0	0

3 Residue-property plots

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: DNA-dependent protein kinase catalytic subunit



D2974	E2974	A2975	L2976	N2977	K2978	Q2979	D2980	W2981	E2985	P2986	T2987	E2988	K2991	W2994	A2997	S2998	C3001	Y3002	W3008	K3009	S3010	L3011	E3012	Y3013	C3014	S3015	T3016	E3022	PRO	PRO	ASP	LEU	ASN	PRO	G2948	Q2951	T2952	T2953	F3034	F3035	L2958	S2963	P2964	F3035	Q3037	E3038	P3042	M3044	I3045	R3046	K3047	K3048	Y2972																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
L2739	S2740	L2741	M2742	H2743	A2744	R2745	K2746	F2823	A2749	T2825	E2750	Q2751	K2752	R2753	E2754	T2833	Q2834	K2835	L2836	L2837	Q2838	D2839	F2840	N2841	T2847	F2851	P2852	P2853	R2854	F2855	S2856	C2857	I2858	Q2859	D2860	Q2864	H2865	A2866	A2867	L2868	L2869	S2870	L2871	C2880	S2883	L2884	Q2885	R2891	L2892	L2893	R2800	D2801	I2804	A2805	L2887	K2806																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
L2900	L2901	PRO	ALA	GLU	LEU	PRO	ALA	ALA	LYS	ARG	VAL	ARG	GLY	LYS	ALA	ARG	L2916	Y2920	L2921	W2923	Y2924	E2925	L2926	A2927	K2928	L2929	L2930	R2931	D2937	Y2938	L2939	R2940	E2941	L2942	F2943	G2948	Q2951	T2952	T2953	Q2954	S2955	L2958	S2963	P2964	F3035	Q3037	E3038	P3042	M3044	I3045	R3046	K3047	K3048	Y2972																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
L2310	R2311	Y2312	K2313	E2314	V2315	Y2316	A2317	L2318	L2319	S2320	L2321	Y2322	L2323	G2324	L2325	R2328	Y2329	V2330	R2333	E2339	S2340	L2341	C2342	E2343	L2344	V2345	A2346	Q2347	Q2348	L2349	K2350	Q2351	H2352	Q2353	M2356	D2357	D2358	K2359	F2360	V2362	K2366	V2367	F2368	K2369	S2370	F2371	L2372	P2373	P2374	V2375	L2376	R2377																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
F2309	V2310	R2311	Y2312	K2313	E2314	V2315	Y2316	A2317	L2318	L2319	S2320	L2321	Y2322	L2323	G2324	L2325	R2328	Y2329	V2330	R2333	E2339	S2340	L2341	C2342	E2343	L2344	V2345	A2346	Q2347	Q2348	L2349	K2350	Q2351	H2352	Q2353	M2356	D2357	D2358	K2359	F2360	V2362	K2366	V2367	F2368	K2369	S2370	F2371	L2372	P2373	P2374	V2375	L2376	R2377																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
V2382	F2383	F2384	L2385	L2386	P2387	K2388	F2389	H2390	E2391	A2392	V2393	L2394	T2395	L2396	L2397	C2398	V2401	L2402	C2403	R2404	V2405	E2406	G2407	M2408	T2409	E2410	L2411	Y2412	F2413	Q2414	L2415	K2418	V2421	R2425	H2426	R2427	D2428	D2429	E2430	R2431	Q2432	K2433	D2437	M2442	L2446	F2447	R2448	V2449	E2450	L2451	R2452																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
F2461	H2464	F2465	S2466	T2467	R2470	F2471	Q2472	M2473	I2476	L2477	M2478	W2479	H2481	R2485	ASP	PRO	GLU	THR	D2492	M2493	D2494	E2497	F2498	K2500	D2504	I2507	Q2508	G2509	L2510	M2514	L2517	Q2518	F2524	W2525	S2526	H2527	E2528	T2529	R2530	L2531	P2532	S2533	M2534	D2537	R2538	L2539	L2540	L2541	L2542	L2543	L2544	L2545	L2546	L2547	L2548	L2549	L2550	L2551	L2552	L2553	L2554	L2555	L2556	L2557	L2558	L2559	L2560	L2561	L2562	L2563	L2564	L2565	L2566	L2567	L2568	L2569	L2570	L2571	L2572	L2573	L2574	L2575	L2576	L2577	L2578	L2579	L2580	L2581	L2582	L2583	L2584	L2585	L2586	L2587	L2588	L2589	L2590	L2591	L2592	L2593	L2594	L2595	L2596	L2597	L2598	L2599	L2600	L2601	L2602	L2603	L2604	L2605	L2606	L2607	L2608	L2609	L2610	L2611	L2612	L2613	L2614	L2615	L2616	L2617	L2618	L2619	L2620	L2621	L2622	L2623	L2624	L2625	L2626	L2627	L2628	L2629	L2630	L2631	L2632	L2633	L2634	L2635	L2636	L2637	L2638	L2639	L2640	L2641	L2642	L2643	L2644	L2645	L2646	L2647	L2648	L2649	L2650	L2651	L2652	L2653	L2654	L2655	L2656	L2657	L2658	L2659	L2660	L2661	L2662	L2663	L2664	L2665	L2666	L2667	L2668	L2669	L2670	L2671	L2672	L2673	L2674	L2675	L2676	L2677	L2678	L2679	L2680	L2681	L2682	L2683	L2684	L2685	L2686	L2687	L2688	L2689	L2690	L2691	L2692	L2693	L2694	L2695	L2696	L2697	L2698	L2699	L2700	L2701	L2702	L2703	L2704	L2705	L2706	L2707	L2708	L2709	L2710	L2711	L2712	L2713	L2714	L2715	L2716	L2717	L2718	L2719	L2720	L2721	L2722	L2723	L2724	L2725	L2726	L2727	L2728	L2729	L2730	L2731	L2732	L2733	L2734	L2735	L2736	L2737	L2738	L2739	L2740	L2741	L2742	L2743	L2744	L2745	L2746	L2747	L2748	L2749	L2750	L2751	L2752	L2753	L2754	L2755	L2756	L2757	L2758	L2759	L2760	L2761	L2762	L2763	L2764	L2765	L2766	L2767	L2768	L2769	L2770	L2771	L2772	L2773	L2774	L2775	L2776	L2777	L2778	L2779	L2780	L2781	L2782	L2783	L2784	L2785	L2786	L2787	L2788	L2789	L2790	L2791	L2792	L2793	L2794	L2795	L2796	L2797	L2798	L2799	L2800	L2801	L2802	L2803	L2804	L2805	L2806	L2807	L2808	L2809	L2810	L2811	L2812	L2813	L2814	L2815	L2816	L2817	L2818	L2819	L2820	L2821	L2822	L2823	L2824	L2825	L2826	L2827	L2828	L2829	L2830	L2831	L2832	L2833	L2834	L2835	L2836	L2837	L2838	L2839	L2840	L2841	L2842	L2843	L2844	L2845	L2846	L2847	L2848	L2849	L2850	L2851	L2852	L2853	L2854	L2855	L2856	L2857	L2858	L2859	L2860	L2861	L2862	L2863	L2864	L2865	L2866	L2867	L2868	L2869	L2870	L2871	L2872	L2873	L2874	L2875	L2876	L2877	L2878	L2879	L2880	L2881	L2882	L2883	L2884	L2885	L2886	L2887	L2888	L2889	L2890	L2891	L2892	L2893	L2894	L2895	L2896	L2897	L2898	L2899	L2900	L2901	L2902	L2903	L2904	L2905	L2906	L2907	L2908	L2909	L2910	L2911	L2912	L2913	L2914	L2915	L2916	L2917	L2918	L2919	L2920	L2921	L2922	L2923	L2924	L2925	L2926	L2927	L2928	L2929	L2930	L2931	L2932	L2933	L2934	L2935	L2936	L2937	L2938	L2939	L2940	L2941	L2942	L2943	L2944	L2945	L2946	L2947	L2948	L2949	L2950	L2951	L2952	L2953	L2954	L2955	L2956	L2957	L2958	L2959	L2960	L2961	L2962	L2963	L2964	L2965	L2966	L2967	L2968	L2969	L2970	L2971	L2972	L2973	L2974	L2975	L2976	L2977	L2978	L2979	L2980	L2981	L2982	L2983	L2984	L2985	L2986	L2987	L2988	L2989	L2990	L2991	L2992	L2993	L2994	L2995	L2996	L2997	L2998	L2999	L3000	L3001	L3002	L3003	L3004	L3005	L3006	L3007	L3008	L3009	L3010	L3011	L3012	L3013	L3014	L3015	L3016	L3017	L3018	L3019	L3020	L3021	L3022	L3023	L3024	L3025	L3026	L3027	L3028	L3029	L3030	L3031	L3032	L3033	L3034	L3035	L3036	L3037	L3038	L3039	L3040	L3041	L3042	L3043	L3044	L3045	L3046	L3047	L3048	L3049	L3050	L3051	L3052	L3053	L3054	L3055	L3056	L3057	L3058	L3059	L3060	L3061	L3062	L3063	L3064	L3065	L3066	L3067	L3068	L3069	L3070	L3071	L3072	L3073	L3074	L3075	L3076	L3077	L3078	L3079	L3080	L3081	L3082	L3083	L3084	L3085	L3086	L3087	L3088	L3089	L3090	L3091	L3092	L3093	L3094	L3095	L3096	L3097	L3098	L3099	L3100	L3101	L3102	L3103	L3104	L3105	L3106	L3107	L3108	L3109	L3110	L3111	L3112	L3113	L3114	L3115	L3116	L3117	L3118	L3119	L3120	L3121	L3122	L3123	L3124	L3125	L3126	L3127	L3128	L3129	L3130	L3131	L3132	L3133	L3134	L3135	L3136	L3137	L3138	L3139	L3140	L3141	L3142	L3143	L3144	L3145	L3146	L3147	L3148	L3149	L3150	L3151	L3152	L3153	L3154	L3155	L3156	L3157	L3158	L3159	L3160	L3161	L3162	L3163	L3164	L3165	L3166	L3167	L3168	L3169	L3170	L3171	L3172	L3173	L3174	L3175	L3176	L3177	L3178	L3179	L3180	L3181	L3182	L3183	L3184	L3185	L3186	L3187	L3188	L3189	L3190	L3191	L3192	L3193	L3194	L3195	L3196	L3197	L3198	L3199	L3200	L3201	L3202	L3203	L3204	L3205	L3206	L3207	L3208	L3209	L3210	L3211	L3212	L3213	L3214	L3215	L3216	L3217	L3218	L3219	L3220	L3221	L3222	L3223	L3224	L3225	L3226	L3227	L3228	L3229	L3230	L3231	L3232	L3233	L3234	L3235	L3236	L3237	L3238	L3239	L3240	L3241	L3242	L3243	L3244	L3245	L3246	L3247	L3248	L3249	L3250	L3251	L3252	L3253	L3254	L3255	L3256	L3257	L3258	L3259	L3260	L3261	L3262	L3263	L3264	L3265	L3266	L3267	L3268	L3269	L3270	L3271	L3272	L3273	L3274	L3275	L3276	L3277	L3278	L3279	L3280	L3281	L3282	L3283	L3284	L3285	L3286	L3287	L3288	L3289	L3290	L3291	L3292	L3293	L3294	L3295	L3296	L3297	L3298	L3299	L3300	L3301	L3302	L3303	L3304	L3305	L3306	L3307	L3308	L3309	L3310	L3311	L3312	L3313	L3314	L3315	L3316	L3317	L3318	L3319	L3320	L3321	L3322	L3323	L3324	L3325	L3326	L3327	L3328	L3329	L3330	L3331	L3332	L3333	L3334	L3335	L3336	L3337	L3338	L3339	L3340	L3341	L3342	L3343	L3344	L3345	L3346	L3347	L3348	L3349	L3350	L3351	L3352	L3353	L3354	L3355	L3356	L3357	L3358	L3359	L3360	L3361	L3362	L3363	L3364	L3365	L3366	L3367	L3368	L3369	L3370	L3371	L3372	L3373	L3374	L3375	L3376	L3377	L3378	L3379	L3380	L3381	L3382	L3383	L3384	L3385	L3386	L3387	L3388	L3389	L3390	L3391	L3392	L3393	L3394	L3395	L3396	L3397	L3398	L3399	L3400	L3401	L3402	L3403	L3404	L3405	L3406	L3407	L3408	L3409	L3410	L3411	L3412	L3413	L3414	L3415	L3416	L3417	L3418	L3419	L3420	L3421	L3422	L3423	L3424	L3425	L3426	L3427	L3428	L3429	L3430	L3431	L3432	L3433	L3434	L3435	L3436	L3437	L3438	L3439	L3440	L3441	L3442	L3443	L3444	L3445	L3446	L3447	L3448	L3449	L3450	L3451	L3452	L3453	L3454	L3455	L3456	L3457	L3458	L3459	L3460	L3461	L3462	L3463	L3464	L3465	L3466	L3467	L3468	L3469	L3470	L3471	L3472	L3473	L3474	L3475	L3476	L3477	L3478	L3479	L3480	L3481	L3482	L3483	L3484	L3485	L3486	L3487	L3488	L3489	L3490	L3491	L3492	L3493	L3494	L3495	L3496	L3497	L3498	L3499	L3500	L3501	L3502	L3503	L3504	L3505	L3506	L3507	L3508	L3509	L3510	L3511	L3512	L3513	L3514	L3515	L3516	L3517	L3518	L3519	L3520	L3521	L3522	L3523	L3524

G4083	H4013	G3939	L3775	I3701	F3632	I3472	CYS	K2360	E3195	H3122	L3061
D4086	K4014	L3940	D3778	P3702	I3633	T3479	GLY	E3261	K3196	Q3123	Q3054
H4087	M4015	H3944	G3781	G3707	Q3694	T3480	PRO	H3262	L3197	S3124	R3058
N4088	GLU	M3856	C3782	R3708	T3695	S3481	ALA	H3263	THR	R3125	P3058
R4090	GLN	M3859	S3782	G3709	K3638	S3482	G3407	K3264	LEU	L3126	O3058
A4091	LYS	K3860	A3785	K3710	E3639	K3483	G3408	S3266	PRO	T3127	S3060
Q4092	MET	K3860	A3785	P3711	K3642	V3490	V3409	K3267	GLU	K3128	L3062
E4095	LYS	R3864	L3786	E3714	H3643	P3491	L3416	L3268	ASN	S3131	L3061
E4100	LYS	F3865	Q3787	F3722	H3646	C3492	F3419	R3269	ASN	A3134	T3063
E4101	GLY	E3866	L3788	D3723	K3647	C3493	L3438	D3270	SER	F3064	R3074
Q4102	GLY	T3867	R3789	H3716	G3647	Q3494	C3421	D3271	MET	L3135	L3065
Q4103	GLY	V3793	V3793	K3718	GLY	F3495	Q3422	W3272	ASN	T3136	O3066
V4104	SER	M3796	S3798	I3719	SER	S3497	Q3423	W3276	ASP	E3137	K3067
V4105	TRP	K3873	L3797	I3719	LYS	D3576	Q3424	R3279	GLN	I3138	E3072
C4106	LEU	F3878	F3722	F3722	LYS	W3498	L3424	S3279	ASP	I3142	L3073
E4108	GLU	R3879	R3723	L3723	LEU	L3578	R3425	R3282	ASP	I3145	L3077
A4111	ILE	L3800	R3724	R3725	ARG	S3500	K3426	L3283	PRO	I3145	L3077
T4112	ASN	A3880	E3724	R3725	MET	H3501	E3429	L3288	SER	Q3148	L3077
T4113	VAL	A3880	R3733	M3728	LYS	K3502	ASN	R3287	SER	G3149	L3078
P4114	ALA	D3881	R3733	F3729	LEU	V3503	F3419	R3288	ASP	N3150	L3078
M4115	ALA	R3885	P3735	M3729	S3657	A3504	SER	R3289	ARG	E3079	L3078
L4117	GLU	D3885	K3736	A3730	D3658	A3504	ALA	R3290	ARG	L3151	L3078
M4121	GLU	F3887	K3736	S3731	F3659	L3584	VAL	S3290	MET	L3152	L3078
M4124	LEU	L3889	R3737	L3732	M3660	F3585	ILE	G3291	GLU	H3081	L3078
M4127	LEU	L3889	I3738	I3738	L3666	D3509	ASP	G3292	VAL	Y3082	L3078
M4128	LEU	L3889	L3815	I3739	L3667	Q3510	SER	C3292	GLN	S3083	L3078
A4054	R4048	M3971	L3815	I3739	L3668	A3511	ALA	C3293	GLU	L3157	L3089
M4055	R4049	L3972	L3815	I3739	L3668	V3512	ALA	S3294	GLN	K3158	L3089
P4056	M3980	M3973	M3820	R3741	L3668	A3513	SER	E3295	GLU	R3159	L3089
V4058	M3981	M3974	M3821	L3741	L3668	A3513	LEU	Q3296	GLU	L3086	L3089
L4059	M3982	M3974	Q3822	L3742	M3665	V3514	GLN	F3297	GLU	S3087	L3089
L4061	M3983	M3974	Q3822	H3743	M3666	Q3515	A3443	D3226	D3226	L3161	L3089
L4062	M3984	M3974	Q3822	I3744	L3666	R3516	F3444	L3227	L3227	L3162	L3089
L4063	M3985	M3974	Q3822	E3745	L3667	H3518	E3448	L3228	L3228	T3163	L3089
L4064	M3986	M3974	Q3822	H3748	G3677	Q3518	K3449	S3229	S3229	W3164	L3091
L4065	M3987	M3974	Q3822	P3749	G3678	S3517	M3450	S3230	S3230	L3091	L3091
L4066	M3988	M3974	Q3822	F3750	K3679	S3517	M3451	L3230	L3230	T3165	L3091
L4067	M3989	M3974	Q3822	L3751	L3680	S3518	K3452	L3231	L3231	M3166	Q3093
L4068	M3990	M3974	Q3822	K3681	L3681	V3521	K3455	R3232	R3232	R3167	Q3094
L4069	M3991	M3974	Q3822	E3682	E3682	V3521	S3589	K3241	K3241	Y3168	D3097
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L4071	M3993	M3974	Q3822	E3684	E3684	V3530	SER	F3236	F3236	D3171	R3098
L4072	M3994	M3974	Q3822	E3685	E3685	V3536	PHE	S3237	S3237	A3171	R3098
L4073	M3995	M3974	Q3822	E3686	E3686	S3536	LYS	M3238	M3238	K3172	R3098
L4074	M3996	M3974	Q3822	E3687	E3687	S3536	ASP	K3239	K3239	M3173	R3098
L4075	M3997	M3974	Q3822	E3688	E3688	S3536	ASP	M3240	M3240	Y3102	R3098
L4076	M3998	M3974	Q3822	E3689	E3689	V3536	T3545	Q3241	Q3241	I3178	R3098
L4077	M3999	M3974	Q3822	E3690	E3690	V3536	T3546	R3242	R3242	W3179	R3098
L4078	M4000	M3974	Q3822	E3691	E3691	V3536	T3547	I3243	I3243	D3180	R3098
L4079	M4001	M3974	Q3822	E3692	E3692	V3536	T3548	N3250	N3250	F3110	R3098
L4080	M4002	M3974	Q3822	E3693	E3693	V3536	T3549	R3248	R3248	I3182	R3098
L4081	M4003	M3974	Q3822	E3694	E3694	V3536	T3550	Q3249	Q3249	I3183	R3098
L4082	M4004	M3974	Q3822	E3695	E3695	V3536	T3551	N3251	N3251	R3186	R3098
L4083	M4005	M3974	Q3822	E3696	E3696	V3536	T3552	R3254	R3254	F3189	R3098
L4084	M4006	M3974	Q3822	E3697	E3697	V3536	T3553	A3255	A3255	L3117	R3098
L4085	M4007	M3974	Q3822	E3698	E3698	V3536	T3554	R3256	R3256	D3118	R3098
L4086	M4008	M3974	Q3822	E3699	E3699	V3536	T3555	R3257	R3257	S3191	R3098
L4087	M4009	M3974	Q3822	E3700	E3700	V3536	T3556	I3258	I3258	K3192	R3098
L4088	M4010	M3974	Q3822	E3701	E3701	V3536	T3557	L3259	L3259	L3120	R3098
L4089	M4011	M3974	Q3822	E3702	E3702	V3536	T3558	R3259	R3259	E3194	R3098
L4090	M4012	M3974	Q3822	E3703	E3703	V3536	T3559	R3260	R3260		

● Molecule 1: DNA-dependent protein kinase catalytic subunit

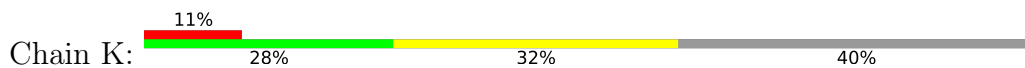
Chain F: 41% 45% 14%

MET	F78	L162	E239	L320	F396	P473	GLU	A622	GLU	I778	L848	E916	P886
ALA	R79	L163	E240	V323	L397	V474	ALA	F623	ALA	I779	E849	L917	L967
GLY	R79	K164	D241	V324	L397	L475	PHE	I624	GLY	Y779	E850	A918	L968
SER	R82	K165	P242	S324	Q399	L479	SER	N625	GLY	I780	E851	L919	V988
ALA	R85	K166	Q243	R325	THR	I479	VAL	N626	VAL	M785	R852	T920	Q990
GLY	R86	I166	T244	M326	ASP	V482	ASN	V627	ASN	Y788	V856	D923	L991
VAL	K87	P167	S245	N330	THR	V483	SER	E628	SER	Y789	Y857	E924	V994
ARG	F88	L168	R246	A331	GLY	H483	SER	R631	SER	Y790	I859	Q925	F995
C10	L89	V170	F249	E332	ASP	H484	SER	R632	SER	K790	L860	Q926	T996
L13	E94	L171	F252	M333	D405	G485	GLU	L634	GLU	D791	G863	K927	T997
Q16	Q98	E172	V252	H334	R406	L487	GLU	P635	GLU	I792	G864	V928	N997
E17	A101	K173	L253	K335	V407	I488	S559	E636	L560	L793	Q865	C931	N998
T18	I107	E174	L253	N336	Y408	R489	L560	K637	L564	P794	I866	C932	K999
A22	Y103	K177	ALA	K337	M410	I490	L564	Q638	L564	P794	I866	E932	K1000
D23	S104	E177	ILE	V340	P411	S492	S571	S492	S571	K801	K867	E933	V1007
R24	V105	G179	ARG	F341	S412	P493	K574	P493	K574	T802	K868	L933	I1013
A30	V106	E183	Q259	Q344	F413	L414	LYS	D580	D580	S803	R870	L934	I1014
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C42	R119	F197	L277	ASN	E436	ARG	GLY	I654	I654	VAL	VAL	K881	L1025
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		E203	L286	L363	V440	GLY	GLY	R659	R659	GLY	GLY	L975	Q978
		E203	L286	L363	V440	GLY	GLY	R659	R659	GLY	GLY	L976	Y979
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		E203	L286	L363	V440	GLY	GLY	R659	R659	GLY	GLY	L982	L983
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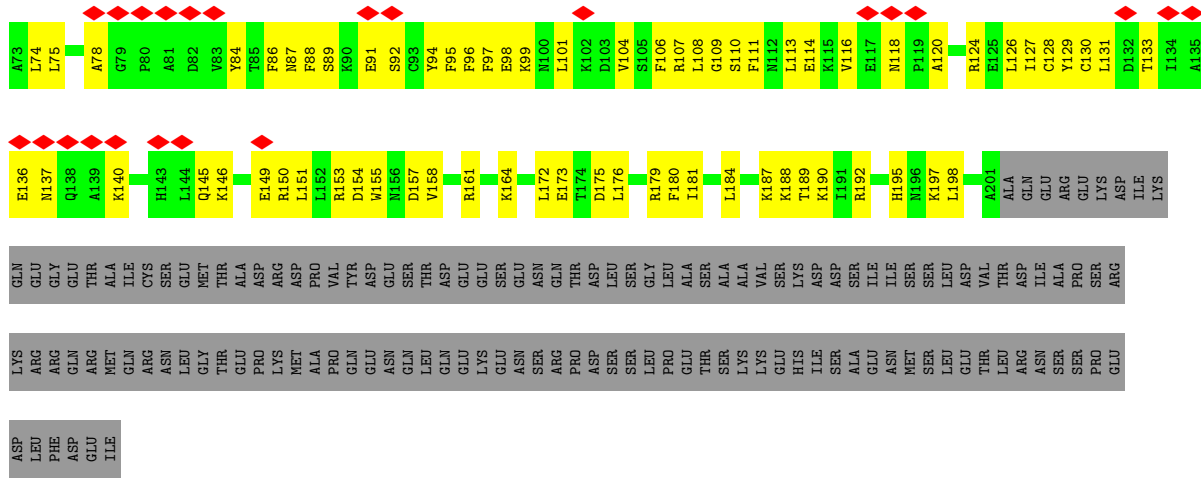
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E2183	E2258	E2183	E2258	A2317	L2393	Y2474	Y2474	E2550	ALA	ALA	I2757	F2840	V2920	V2920	L3080	S3144
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F2218	L2274	F2218	L2274	A2317	L2393	L2476	L2476	E2550	ALA	ALA	E2760	F2840	V2920	V2920	Y3082	F3144
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			A3574	N3660	V3726	P3795	S3870	I3968	ALA	T4112	W4128
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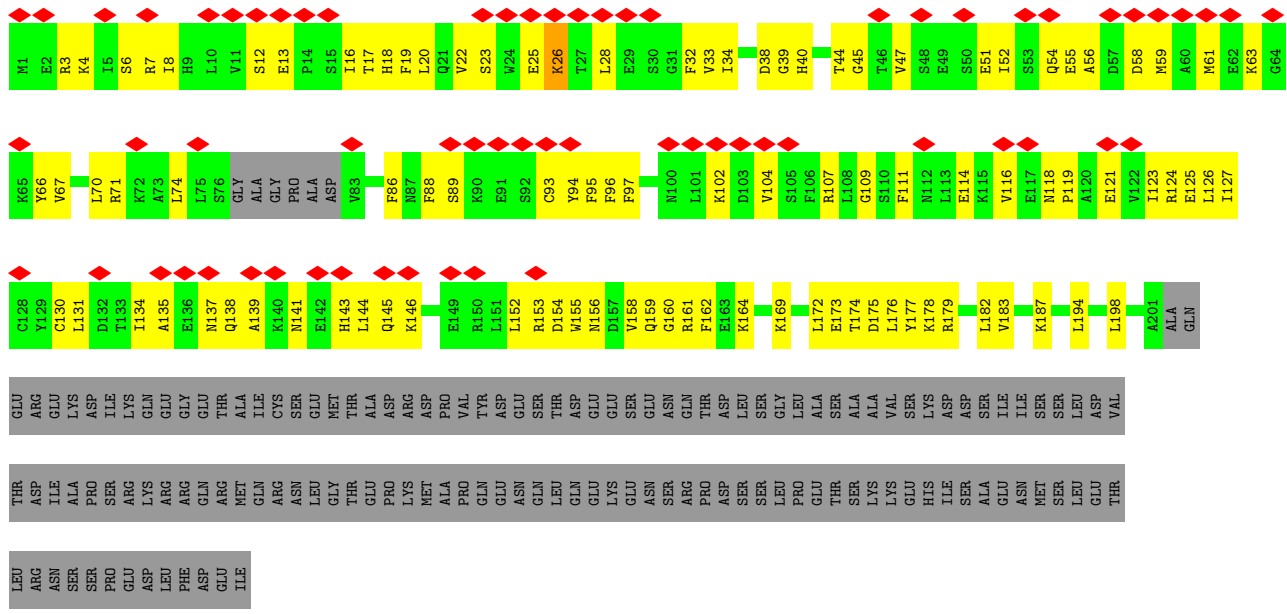
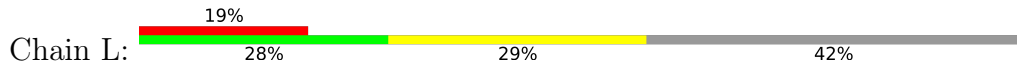
• Molecule 2: DNA repair protein XRCC4



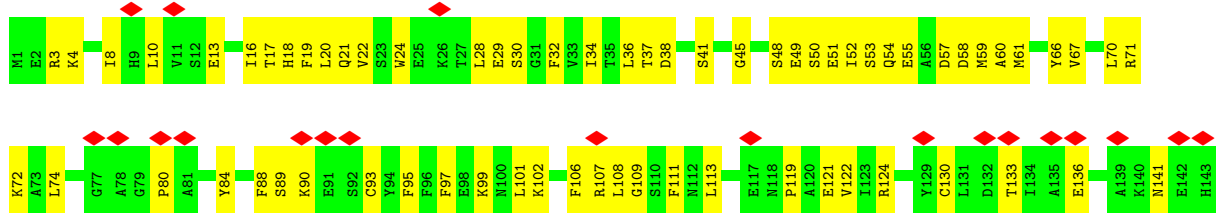
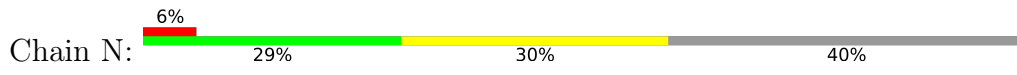
M1	R7	V11	P14	S15	I16	T17	H18	F19	L20	Q21	V22	S23	W24	E25	K26	T27	L28	E29	S30	G31	F32	V33	I34	T35	H40	S41	A42	V43	T44	G45	T46	V47	S48	E49	S50	E51	I52	S53	Q54	E55	A56	M59	A60	M61	K63	G64	R71	K72
----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

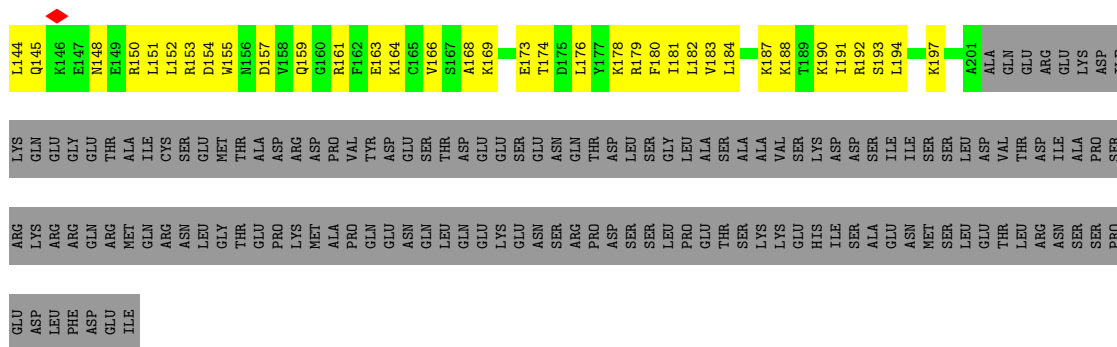


• Molecule 2: DNA repair protein XRCC4

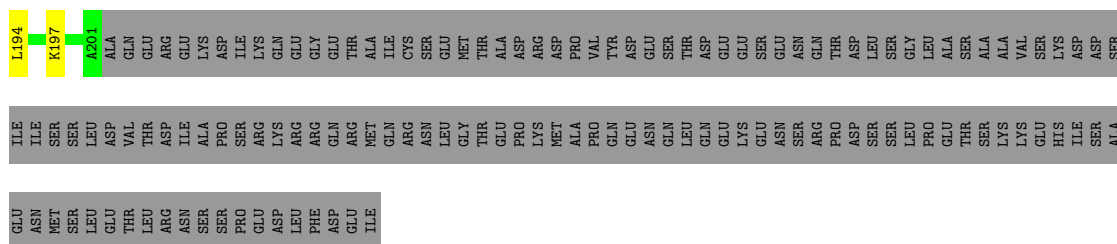
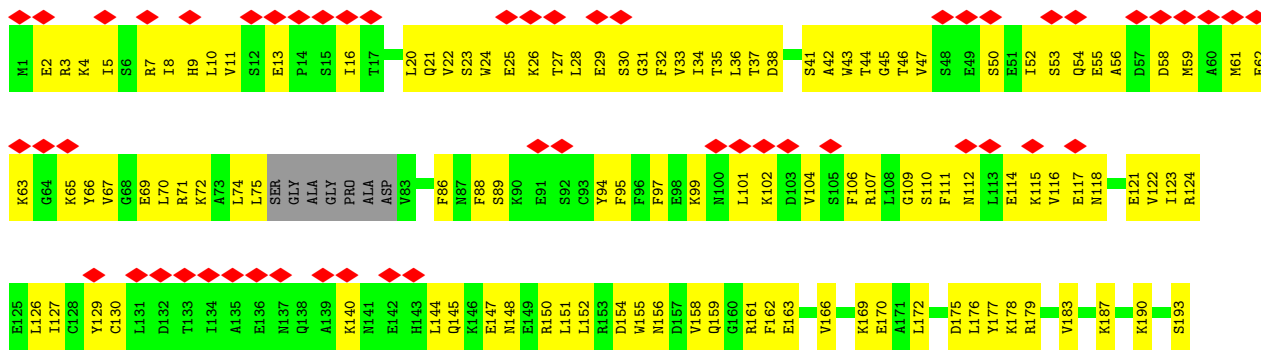
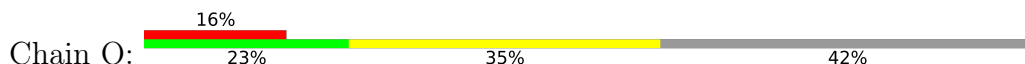


• Molecule 2: DNA repair protein XRCC4



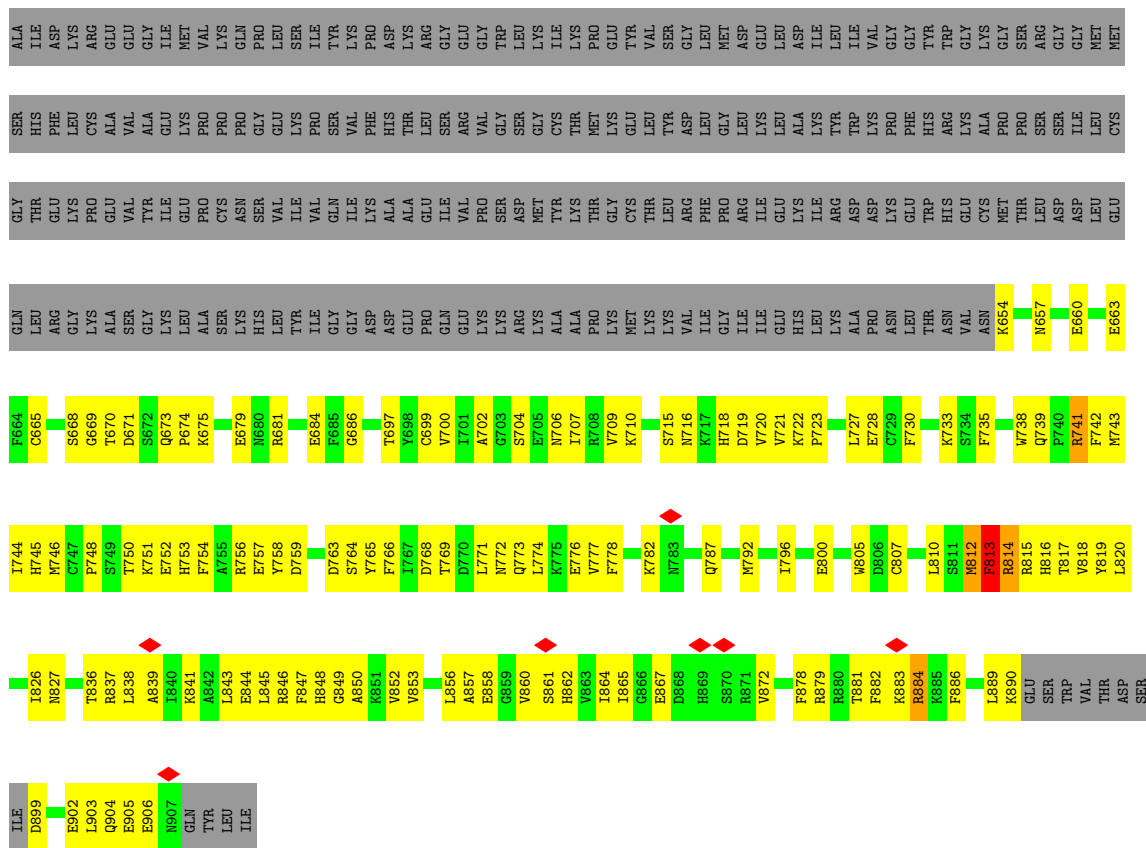


● Molecule 2: DNA repair protein XRCC4

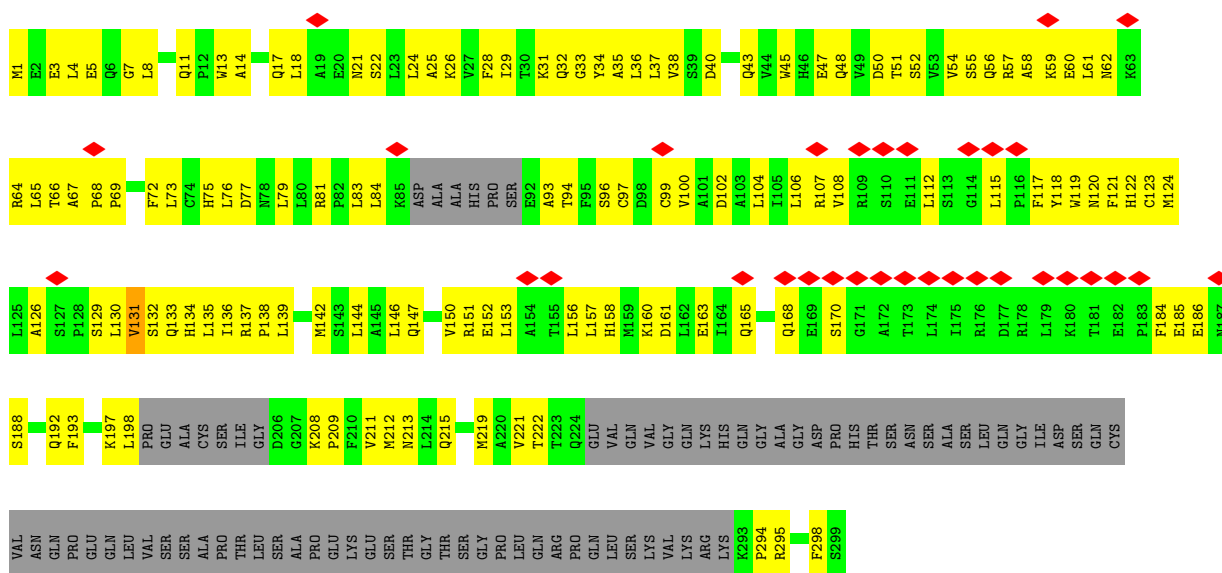


● Molecule 3: DNA ligase 4



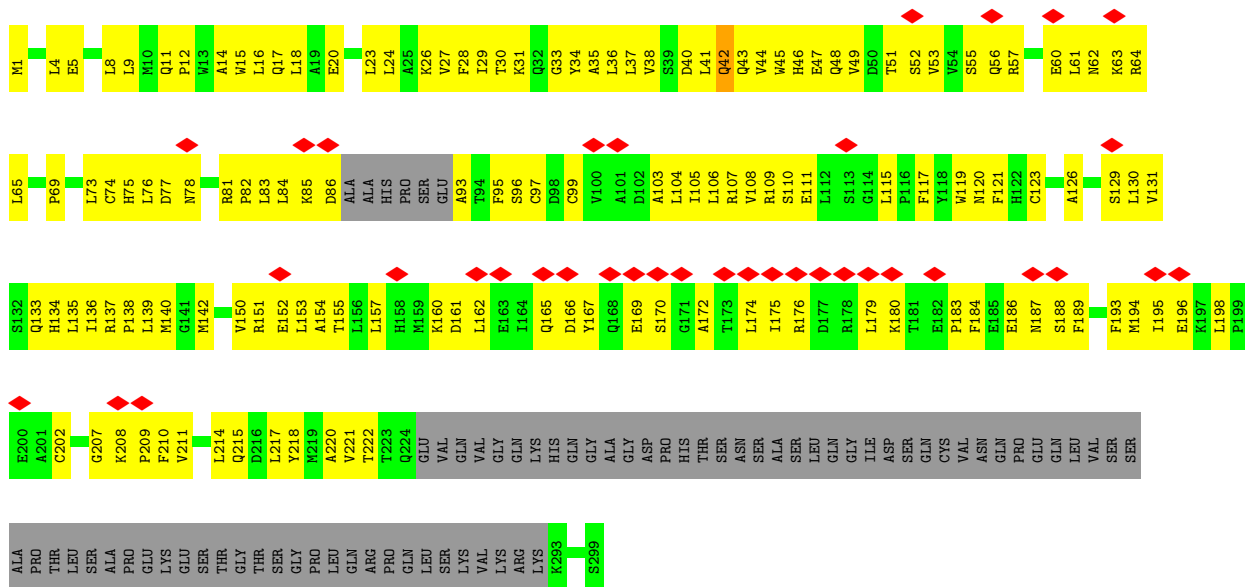


• Molecule 4: Non-homologous end-joining factor 1

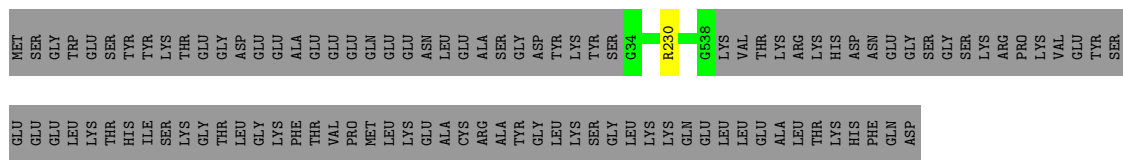
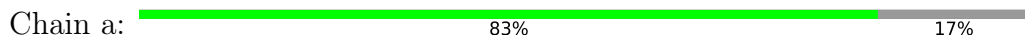


• Molecule 4: Non-homologous end-joining factor 1

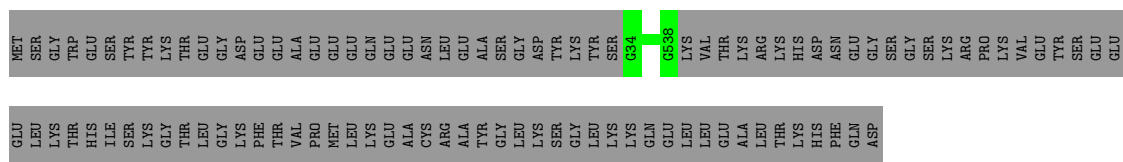
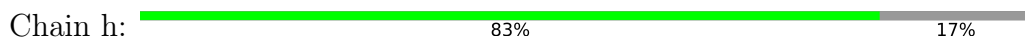




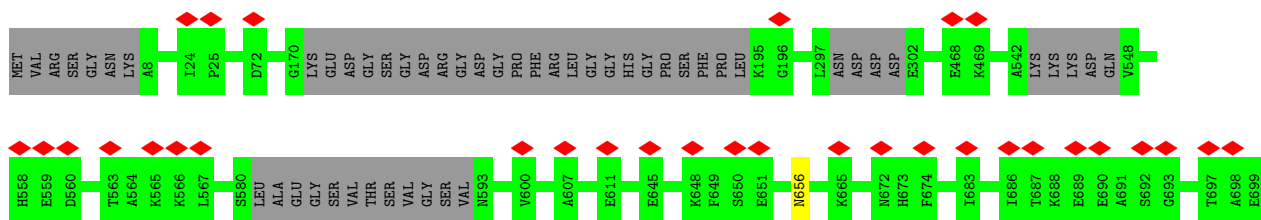
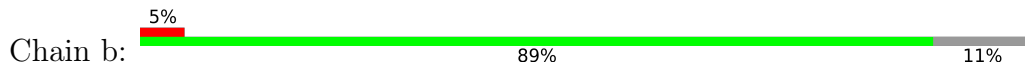
- Molecule 5: X-ray repair cross-complementing protein 6

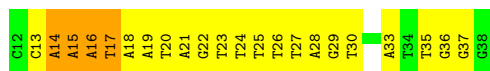


- Molecule 5: X-ray repair cross-complementing protein 6




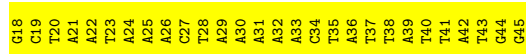
- Molecule 6: X-ray repair cross-complementing protein 5






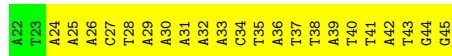
- Molecule 9: DNA (27-MER)

Chain E:  100%



- Molecule 10: DNA (28-MER)

Chain I:  8% 92%



- Molecule 11: DNA (24-MER)

Chain J:  25% 71%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	11019	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 ($e^-/\text{\AA}^2$)	48.03	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	130000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.720	Depositor
Minimum map value	-0.164	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.026	Depositor
Recommended contour level	0.168	Depositor
Map size (Å)	678.08, 678.08, 678.08	wwPDB
Map dimensions	520, 520, 520	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.304, 1.304, 1.304	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.30	0/28804	0.50	0/38906
1	F	0.30	0/28820	0.50	1/38928 (0.0%)
2	K	0.26	0/1657	0.48	0/2228
2	L	0.26	0/1616	0.50	0/2170
2	N	0.27	0/1654	0.50	0/2224
2	O	0.27	0/1616	0.50	0/2170
3	M	0.28	0/2134	0.48	0/2884
3	P	0.28	0/2028	0.51	0/2737
4	Q	0.28	0/1778	0.55	0/2403
4	R	0.27	0/1831	0.56	0/2476
5	a	0.29	0/4116	0.51	0/5549
5	h	0.29	0/4105	0.50	0/5538
6	b	0.27	0/5313	0.48	0/7159
6	j	0.28	0/5178	0.49	1/6979 (0.0%)
7	c	0.29	0/169	0.38	0/226
7	i	0.28	0/166	0.38	0/222
8	D	0.70	0/622	1.16	4/959 (0.4%)
9	E	0.70	0/647	0.96	0/996
10	I	0.72	0/555	1.00	0/854
11	J	0.80	0/548	1.15	1/844 (0.1%)
All	All	0.31	0/93357	0.53	7/126452 (0.0%)

There are no bond length outliers.

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
8	D	14	DA	P-O3'-C3'	-8.45	109.56	119.70
8	D	17	DT	P-O3'-C3'	-8.05	110.04	119.70
8	D	16	DA	P-O3'-C3'	-7.49	110.71	119.70
1	F	956	PRO	N-CA-CB	6.07	110.58	103.30
11	J	31	DT	O4'-C4'-C3'	-5.70	102.22	104.50

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	28250	0	28465	1559	0
1	F	28263	0	28500	1573	0
2	K	1628	0	1620	123	0
2	L	1589	0	1581	99	0
2	N	1625	0	1612	120	0
2	O	1589	0	1587	120	0
3	M	2085	0	2024	144	0
3	P	1983	0	1924	130	0
4	Q	1745	0	1754	132	0
4	R	1796	0	1814	143	0
5	a	4038	0	4092	0	0
5	h	4026	0	4069	0	0
6	b	5214	0	5231	0	0
6	j	5082	0	5069	0	0
7	c	165	0	160	0	0
7	i	162	0	151	0	0
8	D	556	0	310	58	0
9	E	576	0	318	53	0
10	I	494	0	273	44	0
11	J	491	0	278	45	0
All	All	91357	0	90832	4131	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 29.

The worst 5 of 4131 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:F:2440:TYR:HA	1:F:2443:MET:HE3	1.39	1.01
1:F:1269:THR:O	1:F:1273:GLU:HB2	1.66	0.95
1:F:1268:ASN:HD21	1:F:1344:PHE:HA	1.34	0.92
1:F:2225:HIS:HB2	1:F:2231:PHE:HB2	1.51	0.91
4:Q:131:VAL:HG12	4:R:44:VAL:HG22	1.50	0.91

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	3477/4128 (84%)	3144 (90%)	328 (9%)	5 (0%)	51	85
1	F	3467/4128 (84%)	3148 (91%)	319 (9%)	0	100	100
2	K	199/336 (59%)	179 (90%)	20 (10%)	0	100	100
2	L	191/336 (57%)	182 (95%)	9 (5%)	0	100	100
2	N	199/336 (59%)	186 (94%)	13 (6%)	0	100	100
2	O	190/336 (56%)	183 (96%)	7 (4%)	0	100	100
3	M	256/911 (28%)	238 (93%)	18 (7%)	0	100	100
3	P	242/911 (27%)	218 (90%)	21 (9%)	3 (1%)	13	50
4	Q	210/299 (70%)	185 (88%)	24 (11%)	1 (0%)	29	68
4	R	219/299 (73%)	192 (88%)	26 (12%)	1 (0%)	29	68
5	a	503/609 (83%)	464 (92%)	39 (8%)	0	100	100
5	h	503/609 (83%)	471 (94%)	32 (6%)	0	100	100
6	b	640/732 (87%)	599 (94%)	41 (6%)	0	100	100
6	j	624/732 (85%)	597 (96%)	27 (4%)	0	100	100
7	c	21/204 (10%)	21 (100%)	0	0	100	100
7	i	21/204 (10%)	21 (100%)	0	0	100	100
All	All	10962/15110 (72%)	10028 (92%)	924 (8%)	10 (0%)	54	85

5 of 10 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	218	PRO
3	P	814	ARG
4	Q	131	VAL
1	A	216	LYS

Continued on next page...

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Mol	Chain	Res	Type
3	P	812	MET

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	3097/3671 (84%)	3082 (100%)	15 (0%)	88	93
1	F	3109/3671 (85%)	3095 (100%)	14 (0%)	88	93
2	K	180/303 (59%)	180 (100%)	0	100	100
2	L	176/303 (58%)	174 (99%)	2 (1%)	73	85
2	N	178/303 (59%)	177 (99%)	1 (1%)	86	92
2	O	177/303 (58%)	176 (99%)	1 (1%)	86	92
3	M	232/808 (29%)	231 (100%)	1 (0%)	91	94
3	P	217/808 (27%)	213 (98%)	4 (2%)	59	77
4	Q	192/262 (73%)	192 (100%)	0	100	100
4	R	200/262 (76%)	199 (100%)	1 (0%)	88	93
5	a	445/548 (81%)	444 (100%)	1 (0%)	93	96
5	h	445/548 (81%)	445 (100%)	0	100	100
6	b	583/649 (90%)	582 (100%)	1 (0%)	93	96
6	j	562/649 (87%)	561 (100%)	1 (0%)	93	96
7	c	18/160 (11%)	18 (100%)	0	100	100
7	i	17/160 (11%)	17 (100%)	0	100	100
All	All	9828/13408 (73%)	9786 (100%)	42 (0%)	91	94

5 of 42 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	F	4090	ARG
3	P	782	LYS
2	L	26	LYS
2	N	107	ARG

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Mol	Chain	Res	Type
3	P	884	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 76 such sidechains are listed below:

Mol	Chain	Res	Type
2	L	141	ASN
6	b	551	GLN
2	N	18	HIS
4	R	62	ASN
6	j	614	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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.

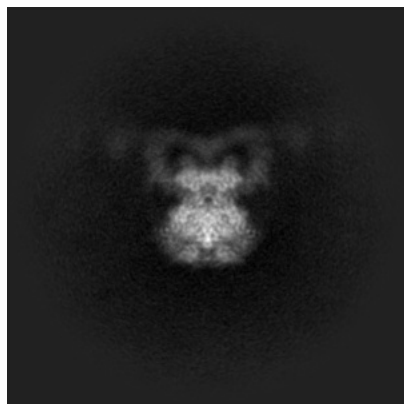
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-16070. These allow visual inspection of the internal detail of the map and identification of artifacts.

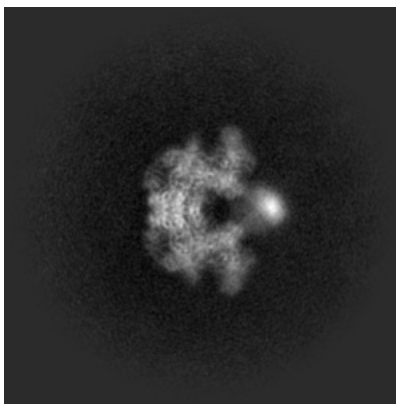
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

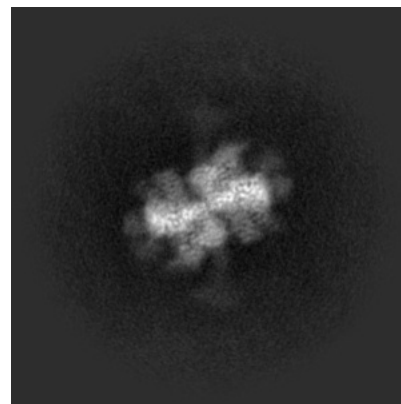
6.1.1 Primary map



X

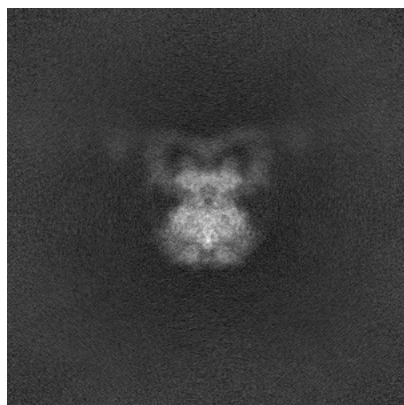


Y

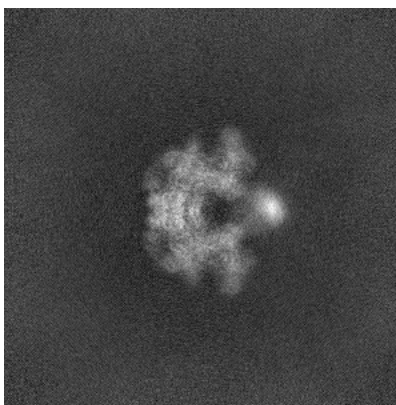


Z

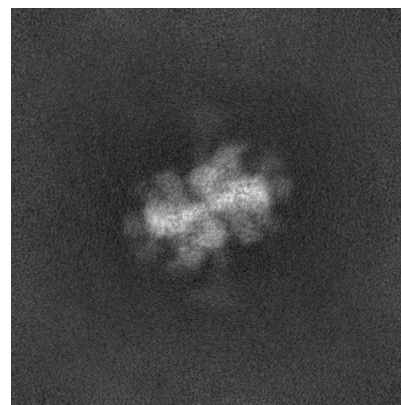
6.1.2 Raw map



X



Y

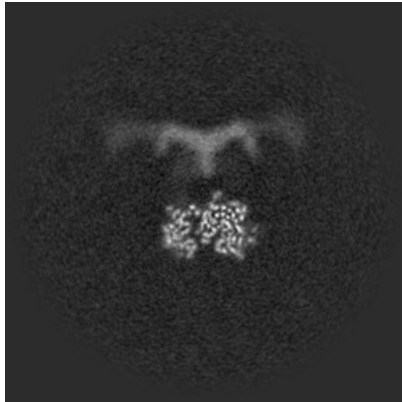


Z

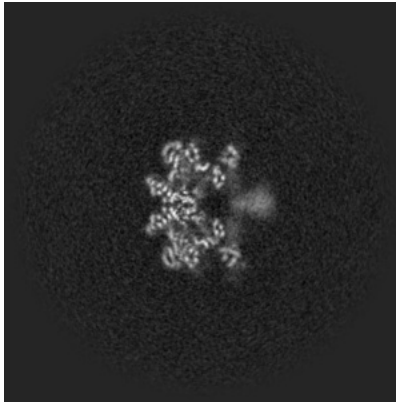
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

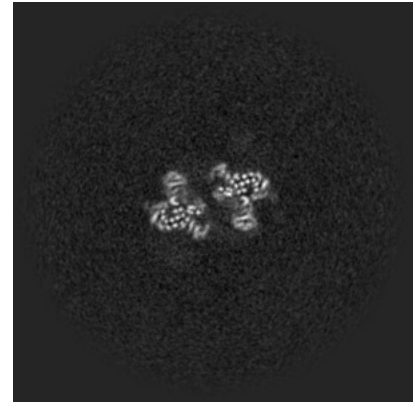
6.2.1 Primary map



X Index: 260

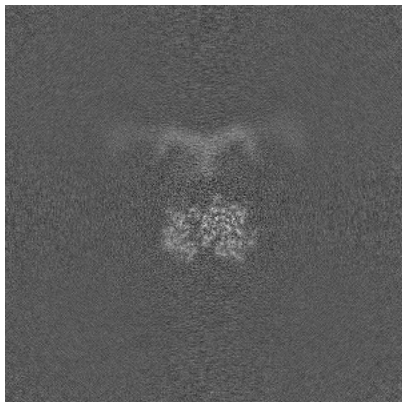


Y Index: 260

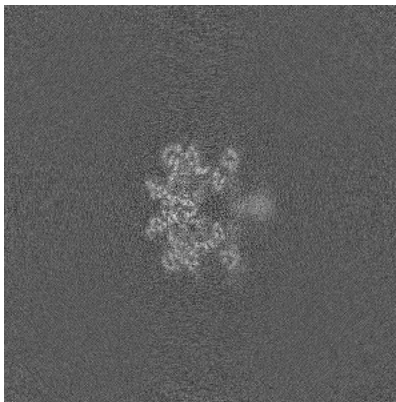


Z Index: 260

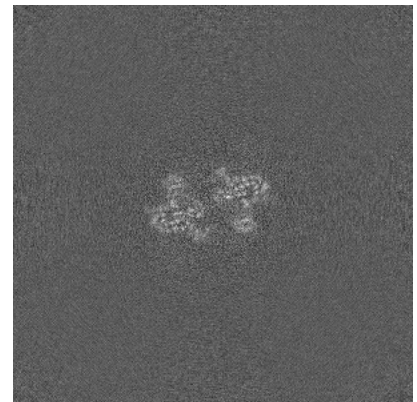
6.2.2 Raw map



X Index: 260



Y Index: 260

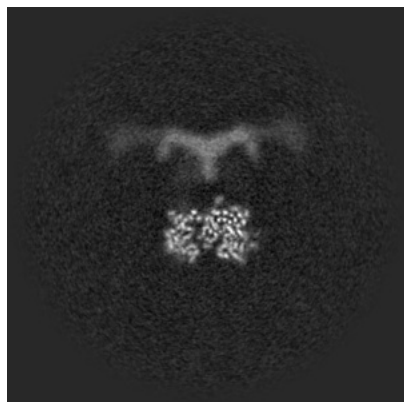


Z Index: 260

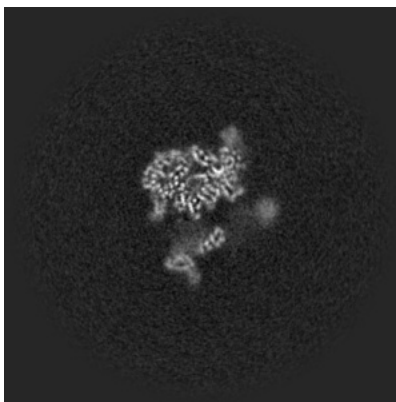
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

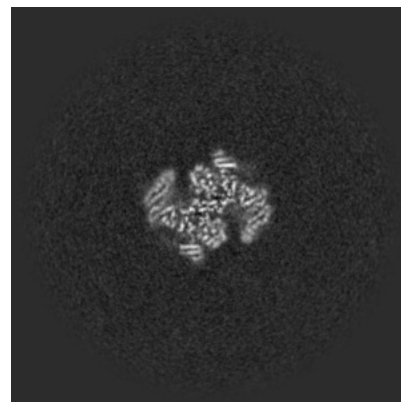
6.3.1 Primary map



X Index: 259



Y Index: 275

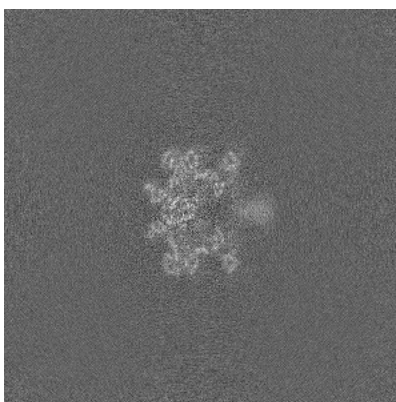


Z Index: 229

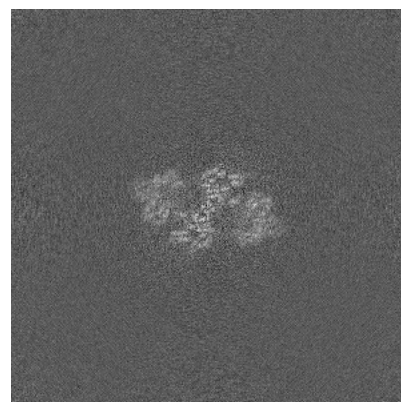
6.3.2 Raw map



X Index: 260



Y Index: 262

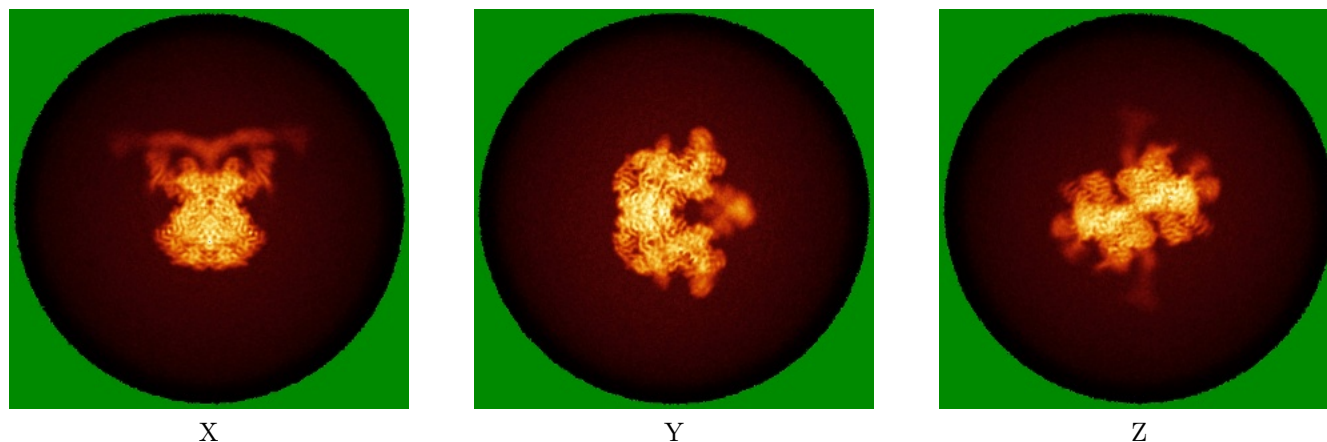


Z Index: 242

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

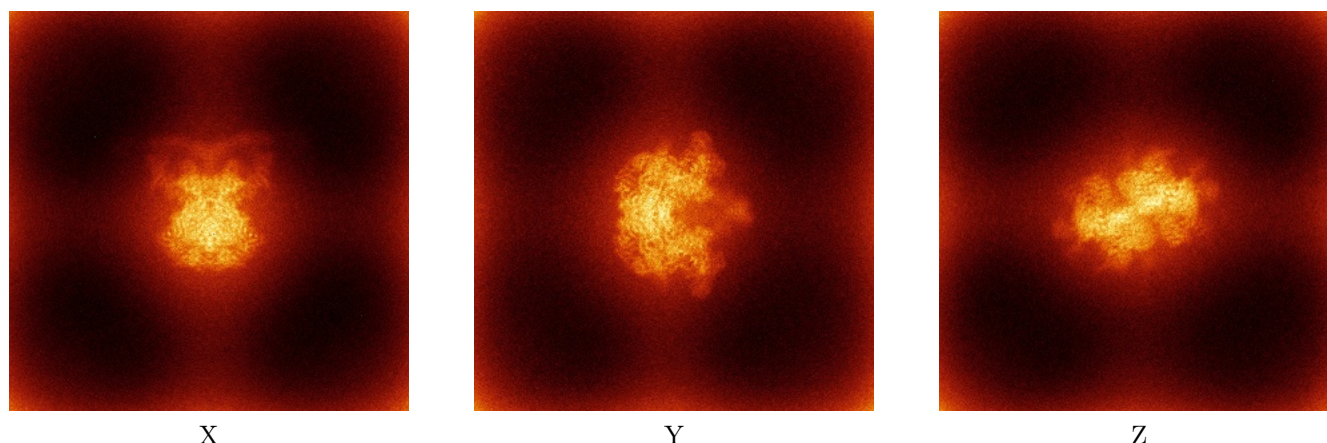


X

Y

Z

6.4.2 Raw map



X

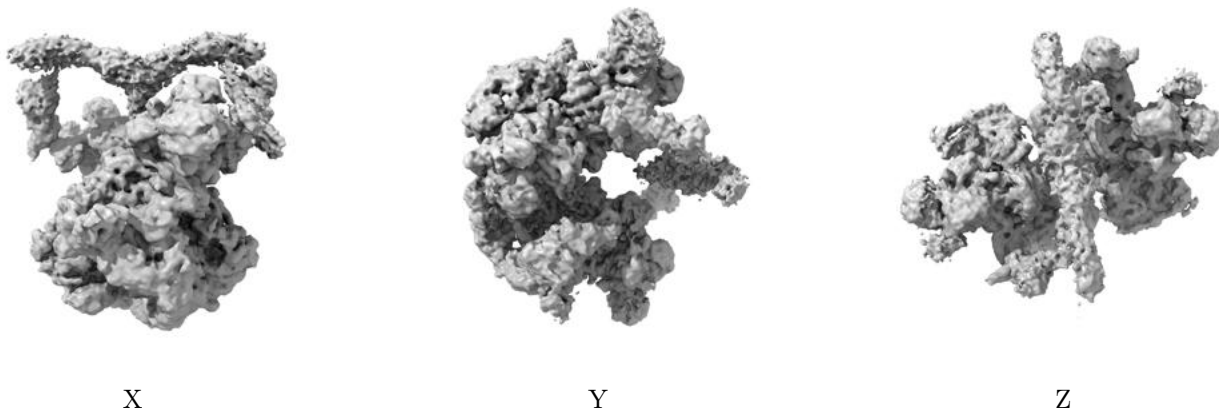
Y

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.

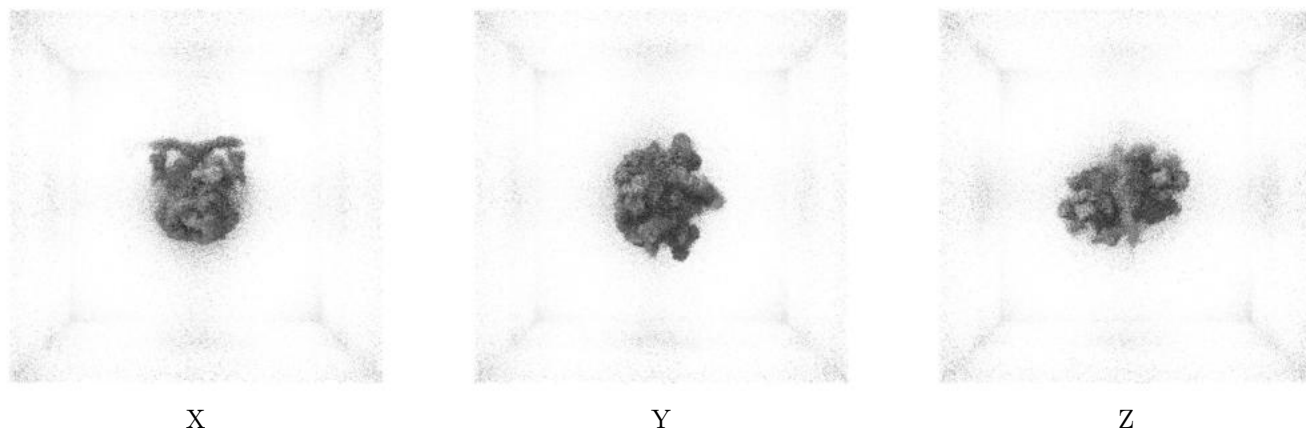
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.168. 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.

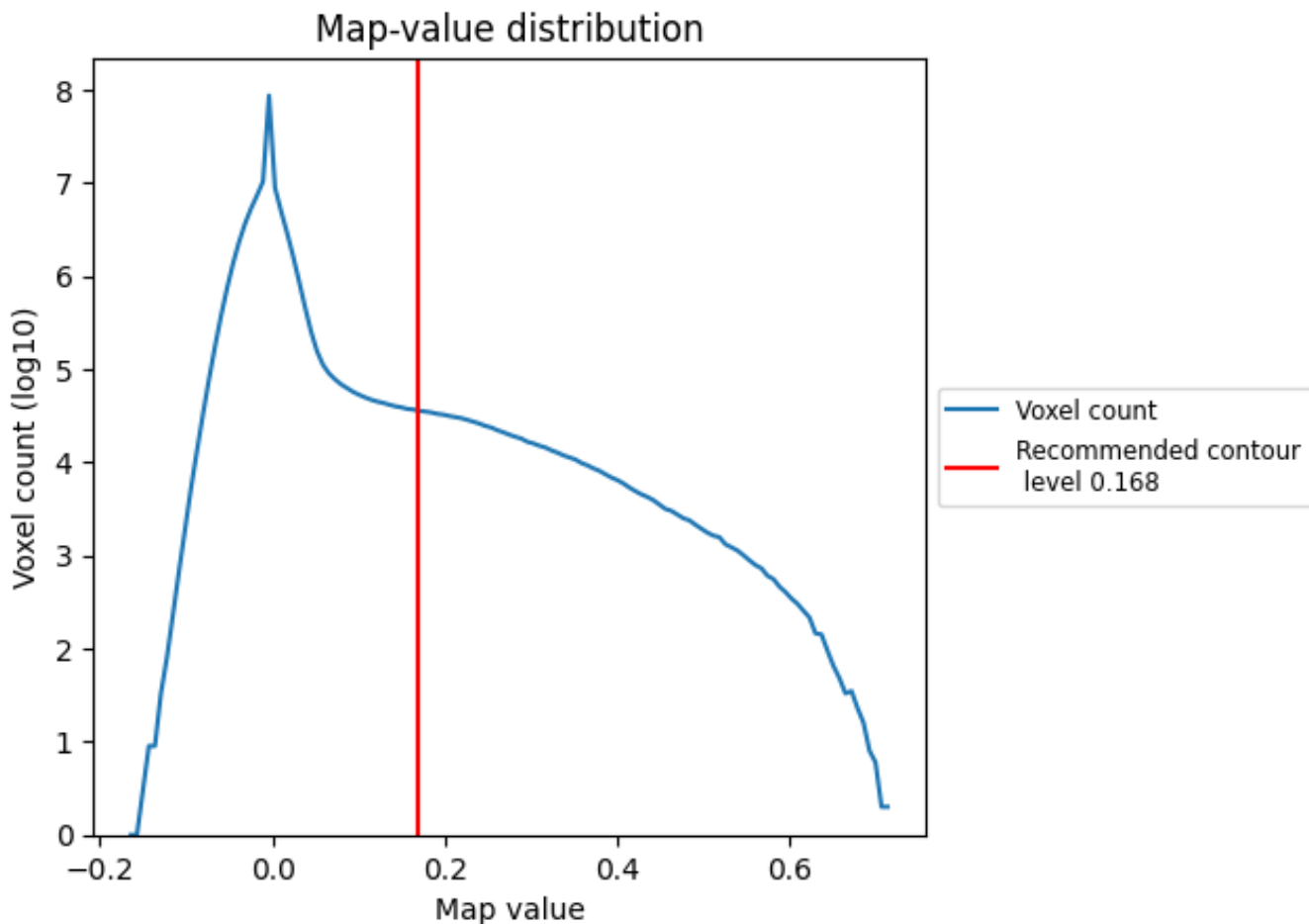
6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis [i](#)

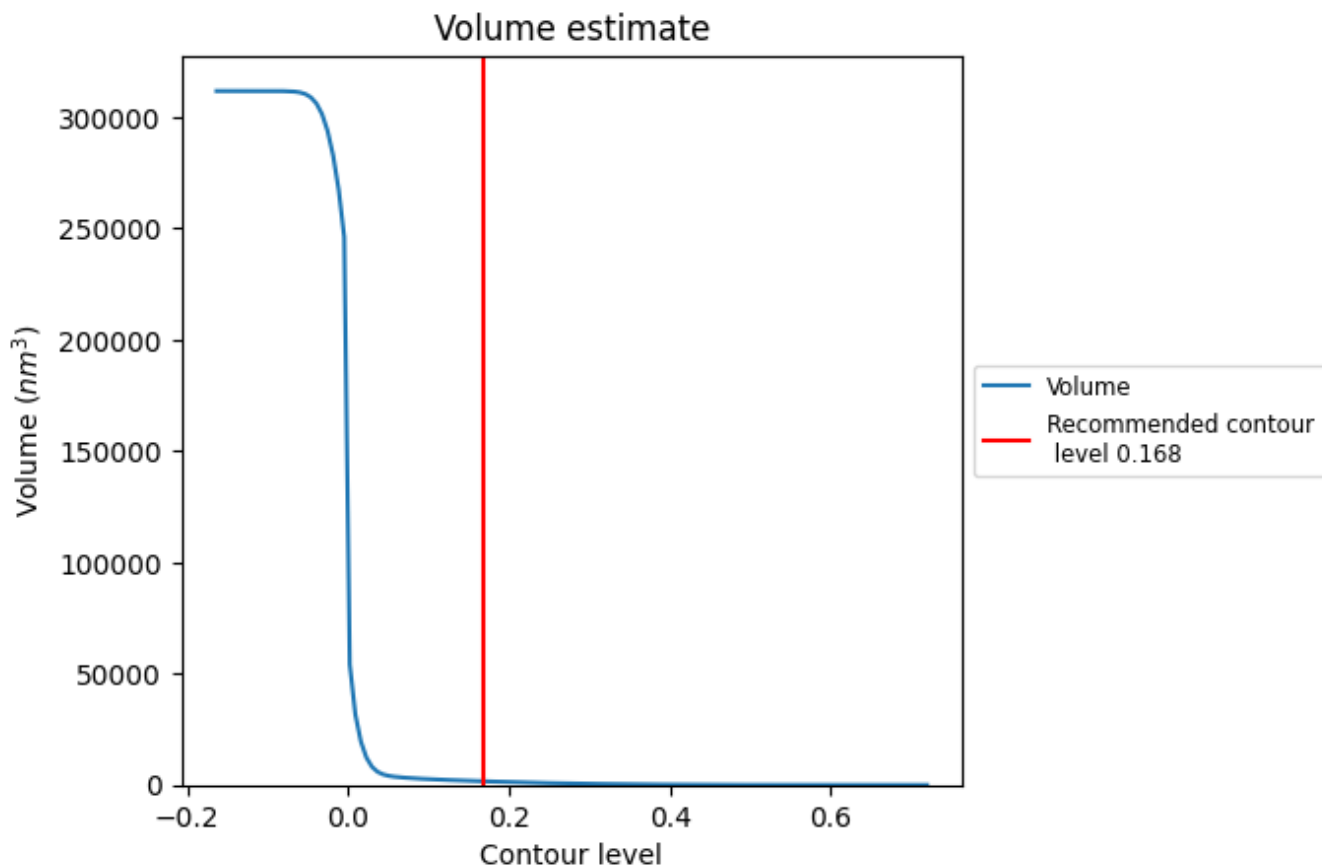
This section contains the results of statistical analysis of the map.

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.

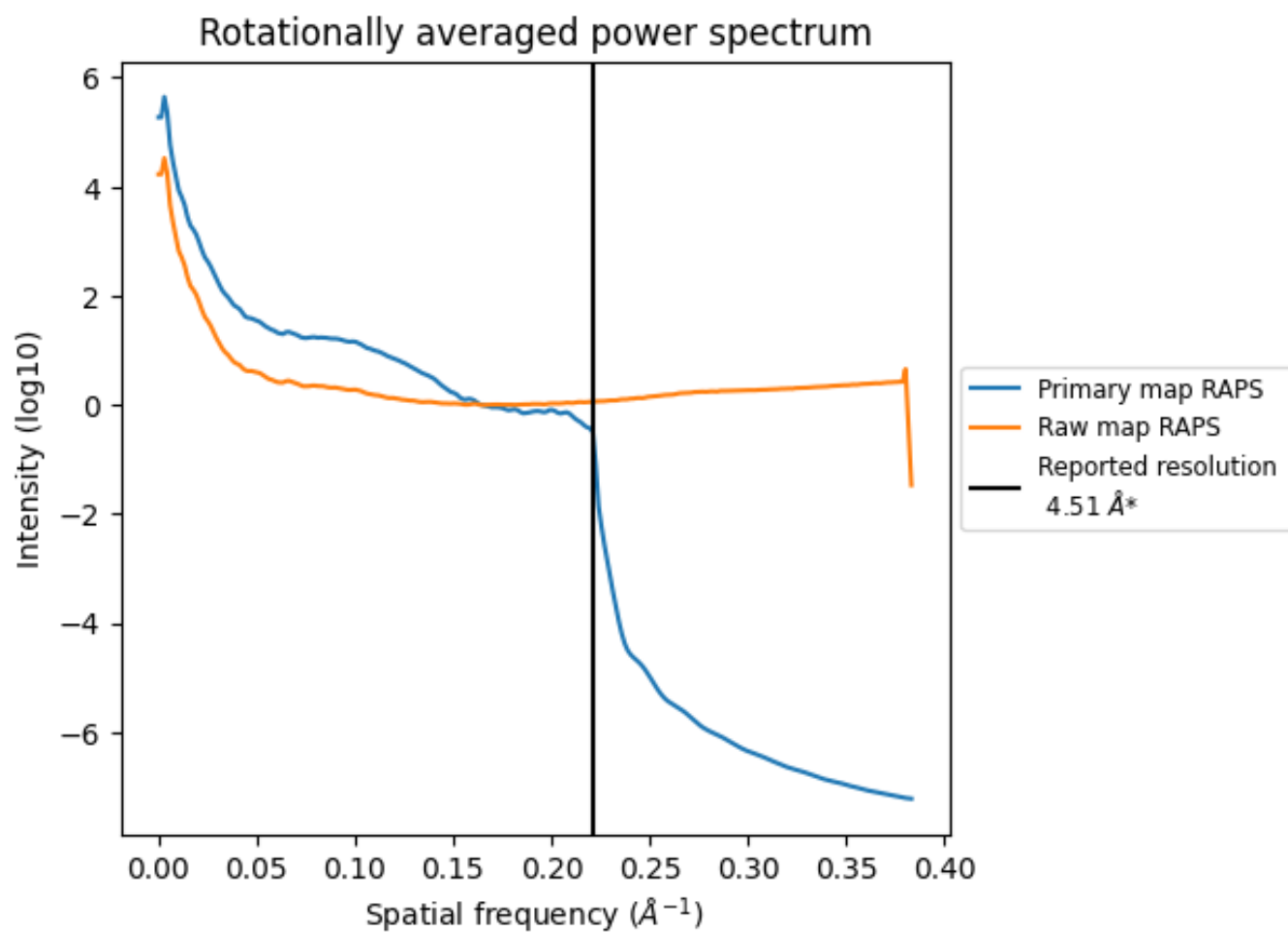
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1663 nm^3 ; this corresponds to an approximate mass of 1502 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

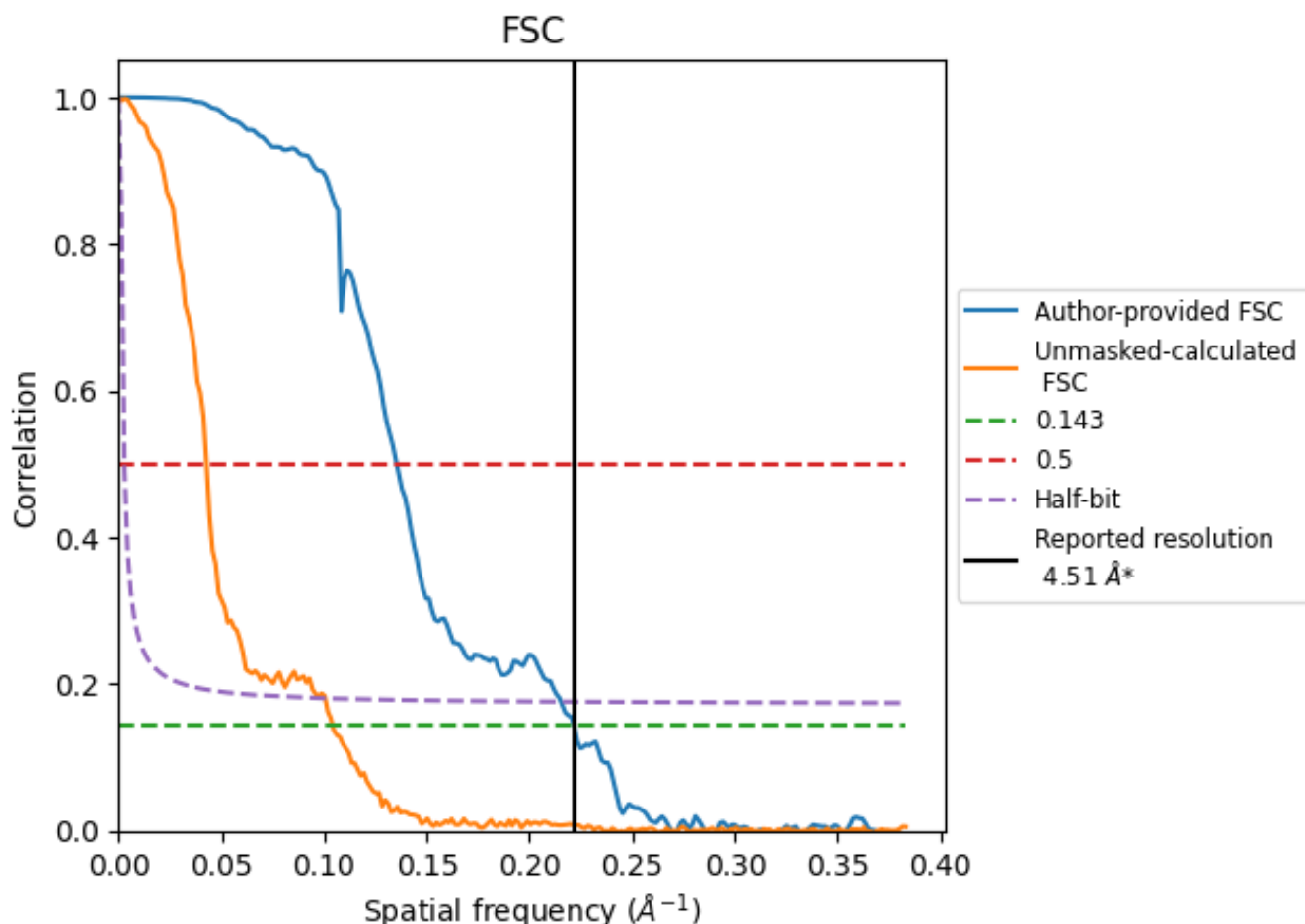


*Reported resolution corresponds to spatial frequency of 0.222 Å⁻¹

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 0.222 Å⁻¹

8.2 Resolution estimates [i](#)

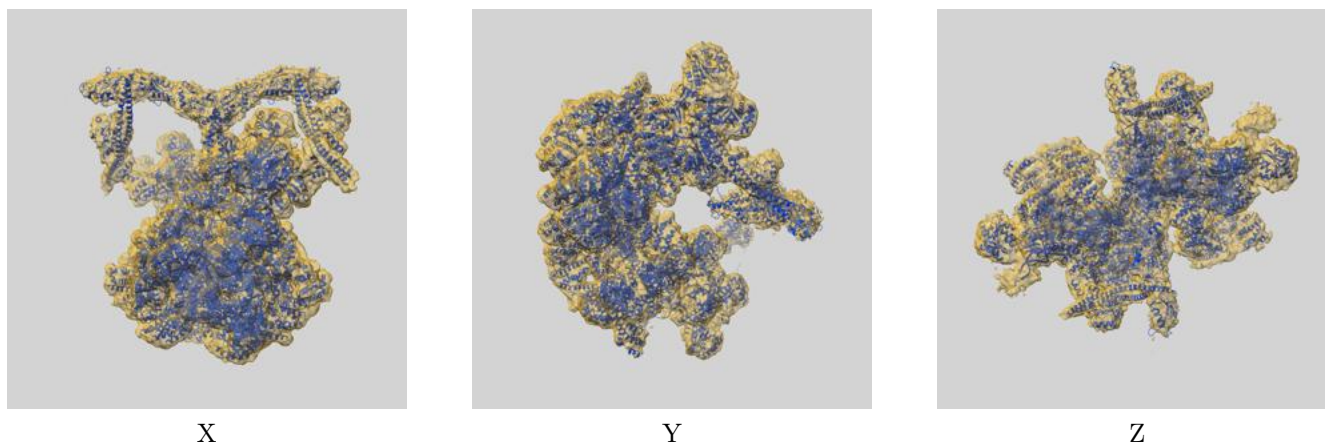
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.51	-	-
Author-provided FSC curve	4.51	7.39	4.64
Unmasked-calculated*	9.60	23.42	9.95

*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 9.60 differs from the reported value 4.51 by more than 10 %

9 Map-model fit [i](#)

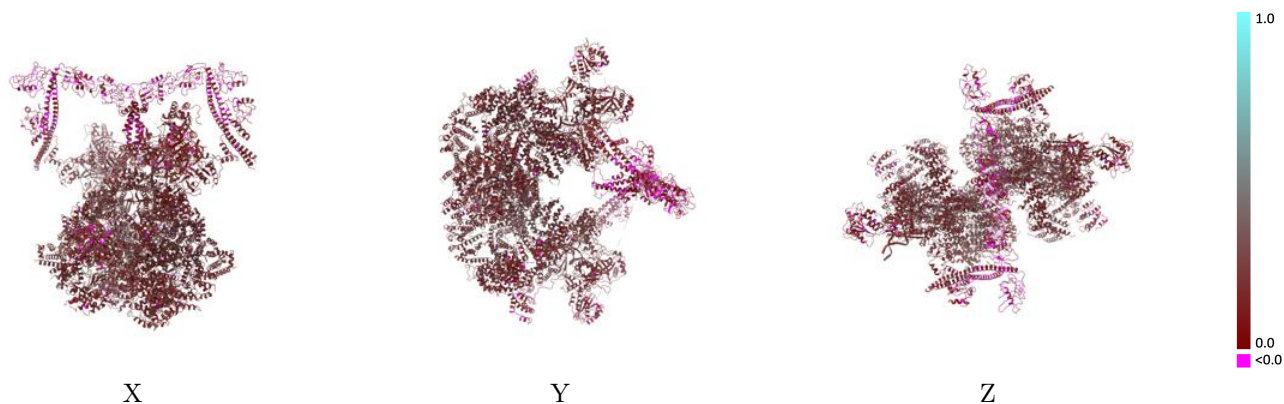
This section contains information regarding the fit between EMDB map EMD-16070 and PDB model 8BHV. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



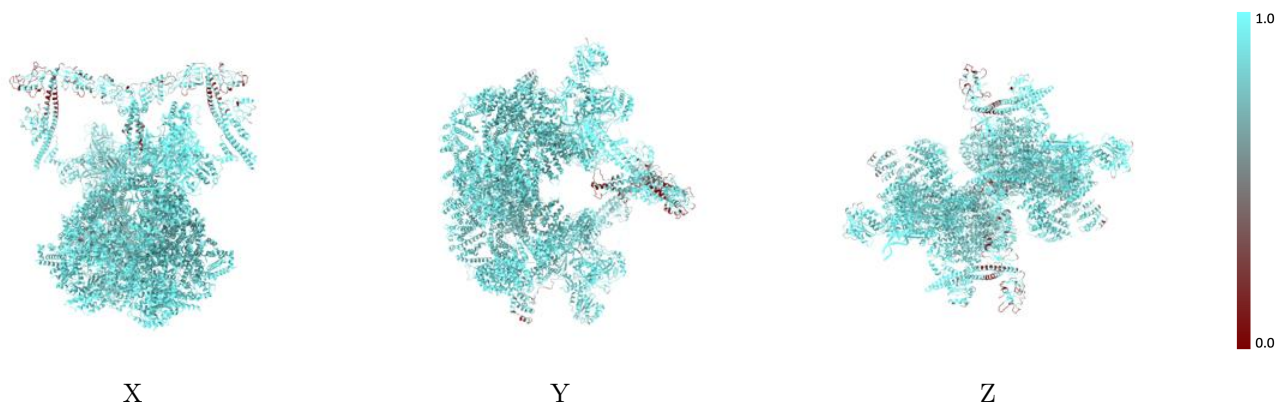
The images above show the 3D surface view of the map at the recommended contour level 0.168 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



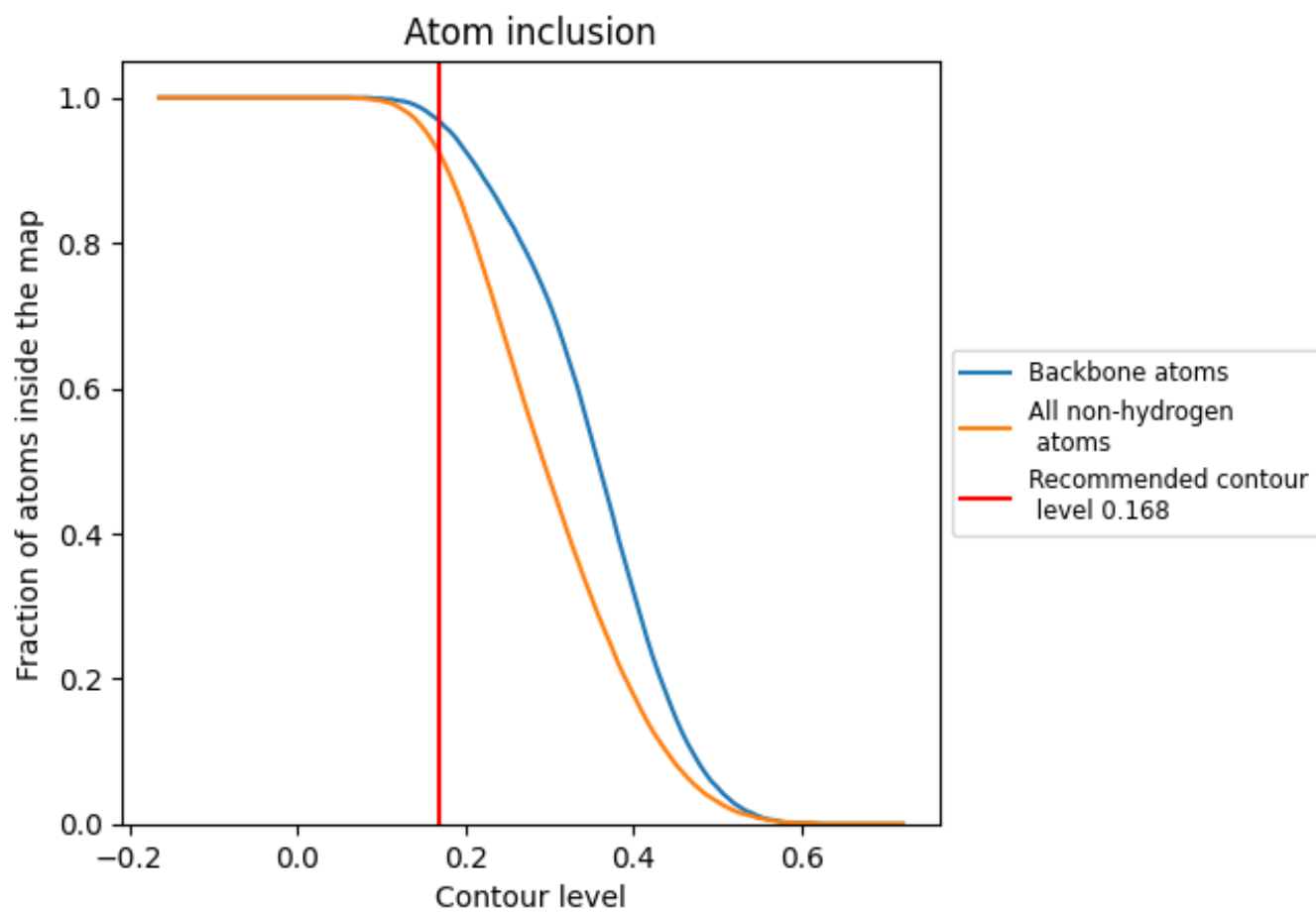
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.168).











































9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 93% 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 (0.168) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9260	 0.2030
A	 0.9500	 0.2210
D	 0.9570	 0.2520
E	 0.9790	 0.2310
F	 0.9560	 0.2290
I	 0.9720	 0.2110
J	 0.9800	 0.2680
K	 0.7510	 0.0990
L	 0.6330	 0.1040
M	 0.9080	 0.1520
N	 0.8230	 0.0990
O	 0.6800	 0.1210
P	 0.9420	 0.1500
Q	 0.8030	 0.0910
R	 0.7830	 0.0720
a	 0.9610	 0.2170
b	 0.8810	 0.1760
c	 0.9700	 0.2440
h	 0.9610	 0.2310
i	 0.9940	 0.2550
j	 0.9380	 0.1920

