



wwPDB EM Validation Summary Report ⓘ

Feb 25, 2024 – 12:49 PM EST

PDB ID : 6X33
EMDB ID : EMD-22016
Title : Wt pig RyR1 in complex with apoCaM, EGTA condition (class 3, open)
Authors : Woll, K.W.; Haji-Ghassemi, O.; Van Petegem, F.
Deposited on : 2020-05-21
Resolution : 4.20 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.dev70
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

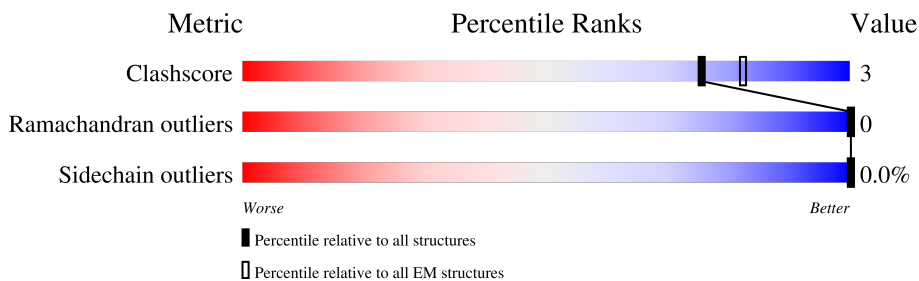
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.20 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.





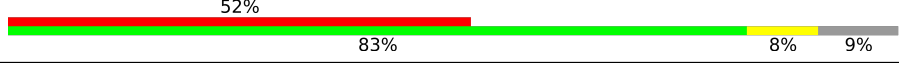
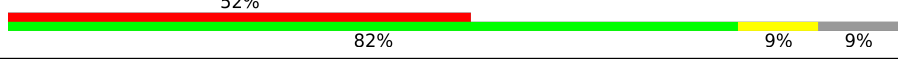
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	107	19% (red), 89% (green), 10% (yellow), 2% (grey)
1	D	107	19% (red), 89% (green), 10% (yellow), 2% (grey)
1	G	107	20% (red), 89% (green), 10% (yellow), 2% (grey)
1	J	107	19% (red), 89% (green), 10% (yellow), 2% (grey)
2	B	3816	32% (red), 93% (green), 7% (yellow)
2	E	3816	32% (red), 93% (green), 7% (yellow)
2	H	3816	32% (red), 93% (green), 7% (yellow)
2	K	3816	32% (red), 93% (green), 7% (yellow)

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
3	C	148	
3	F	148	
3	I	148	
3	L	148	

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 112372 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 Peptidyl-prolyl cis-trans isomerase FKBP1B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	106	727	460	124	139	4	0	0
1	D	106	727	460	124	139	4	0	0
1	G	106	727	460	124	139	4	0	0
1	J	106	727	460	124	139	4	0	0

- Molecule 2 is a protein called Ryanodine Receptor.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	3816	26597	17002	4711	4735	149	6	0
2	E	3816	26597	17002	4711	4735	149	6	0
2	H	3816	26597	17002	4711	4735	149	6	0
2	K	3816	26597	17002	4711	4735	149	6	0

- Molecule 3 is a protein called Calmodulin-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	135	768	477	138	151	2	0	0
3	F	135	768	477	138	151	2	0	0
3	I	135	768	477	138	151	2	0	0
3	L	135	768	477	138	151	2	0	0

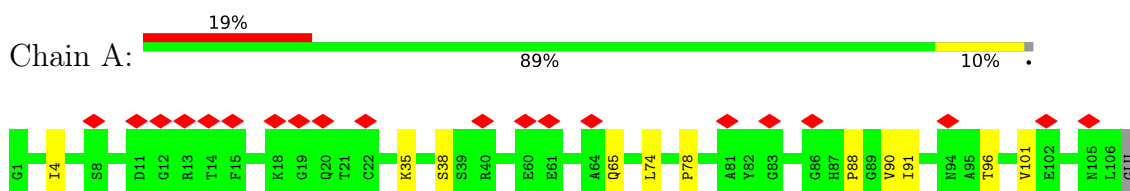
- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
4	B	1	Total 1	Zn 1	0
4	E	1	Total 1	Zn 1	0
4	H	1	Total 1	Zn 1	0
4	K	1	Total 1	Zn 1	0

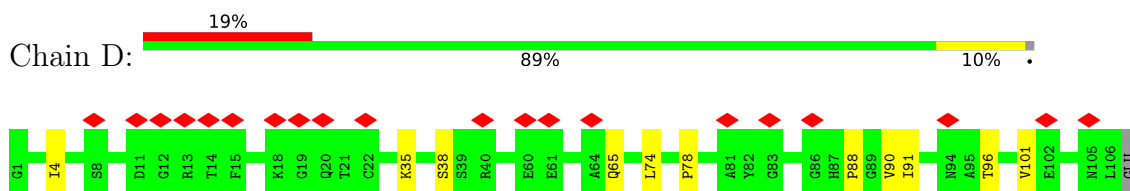
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

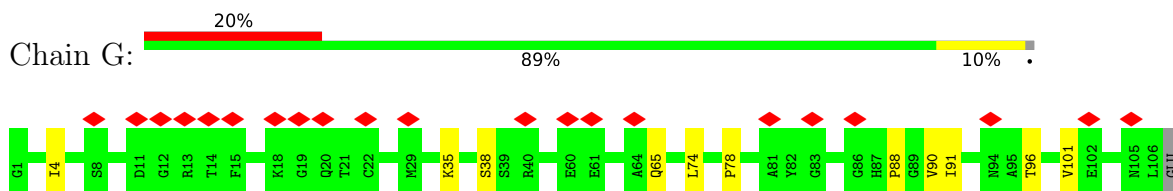
- Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B



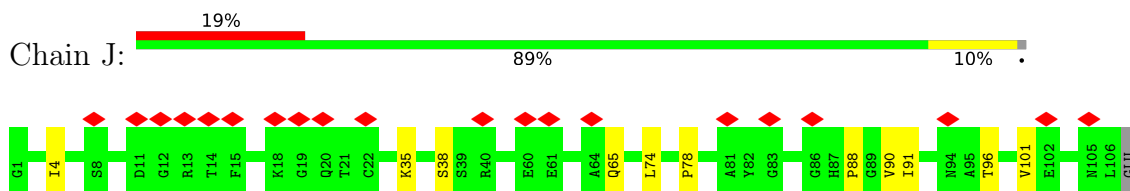
- Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B



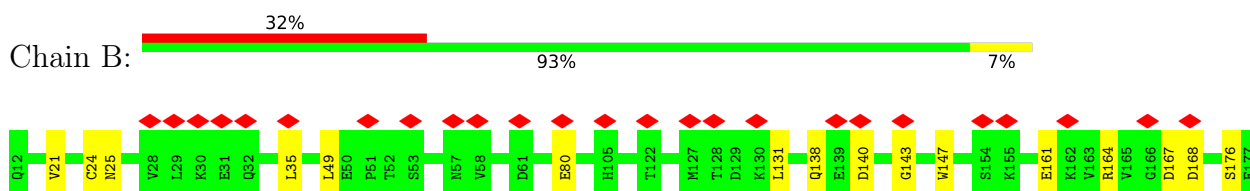
- Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B

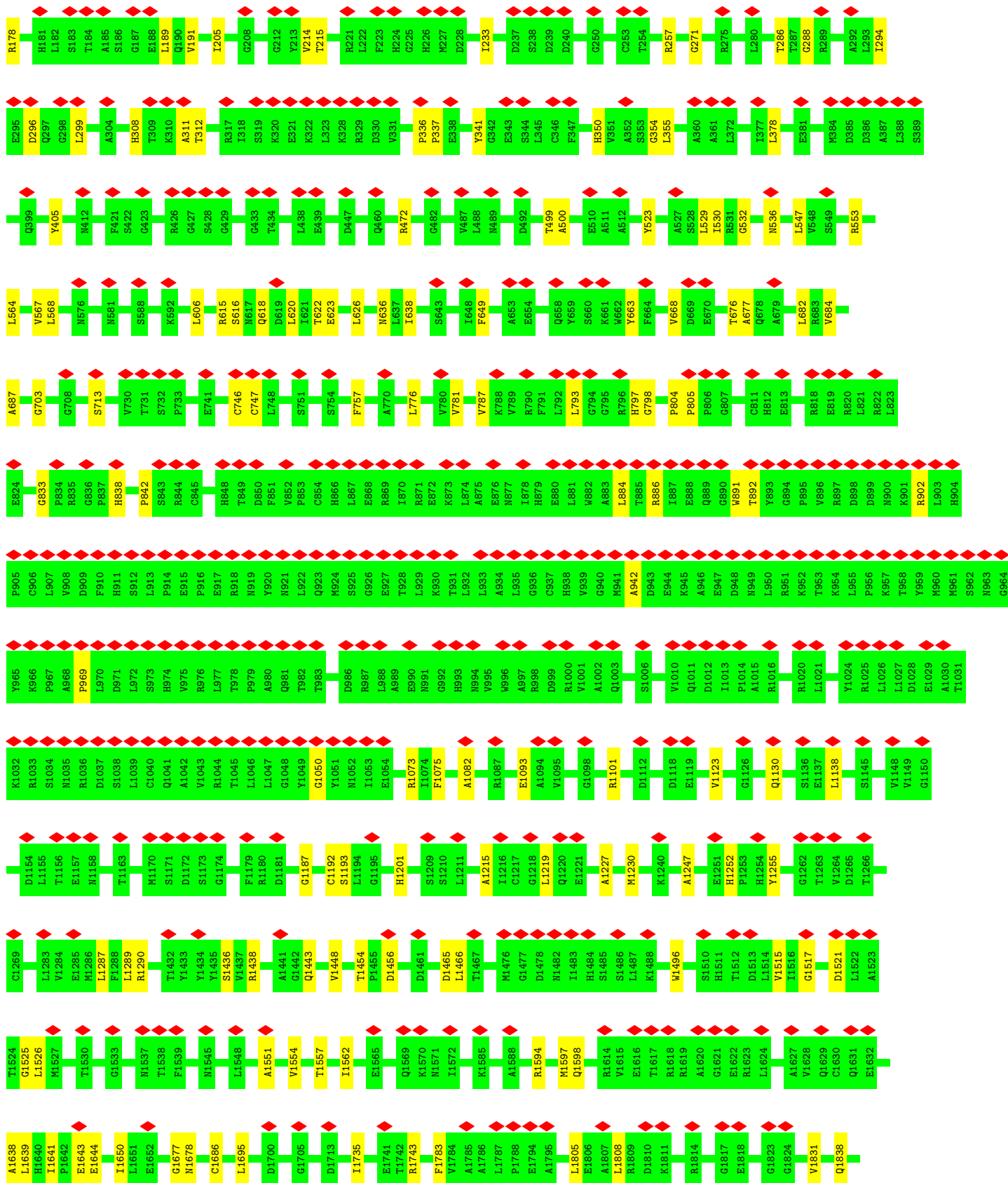


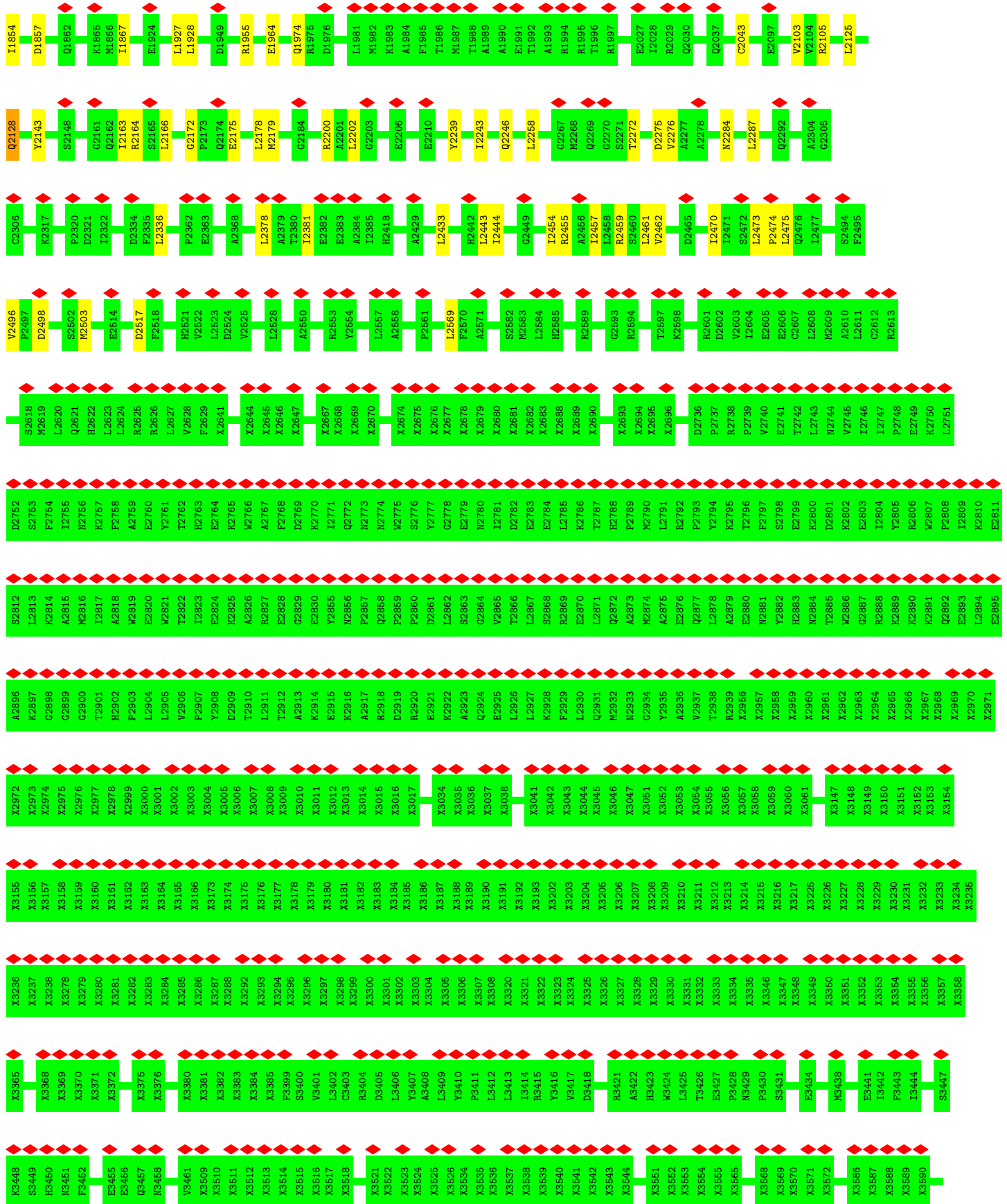
- Molecule 1: Peptidyl-prolyl cis-trans isomerase FKBP1B

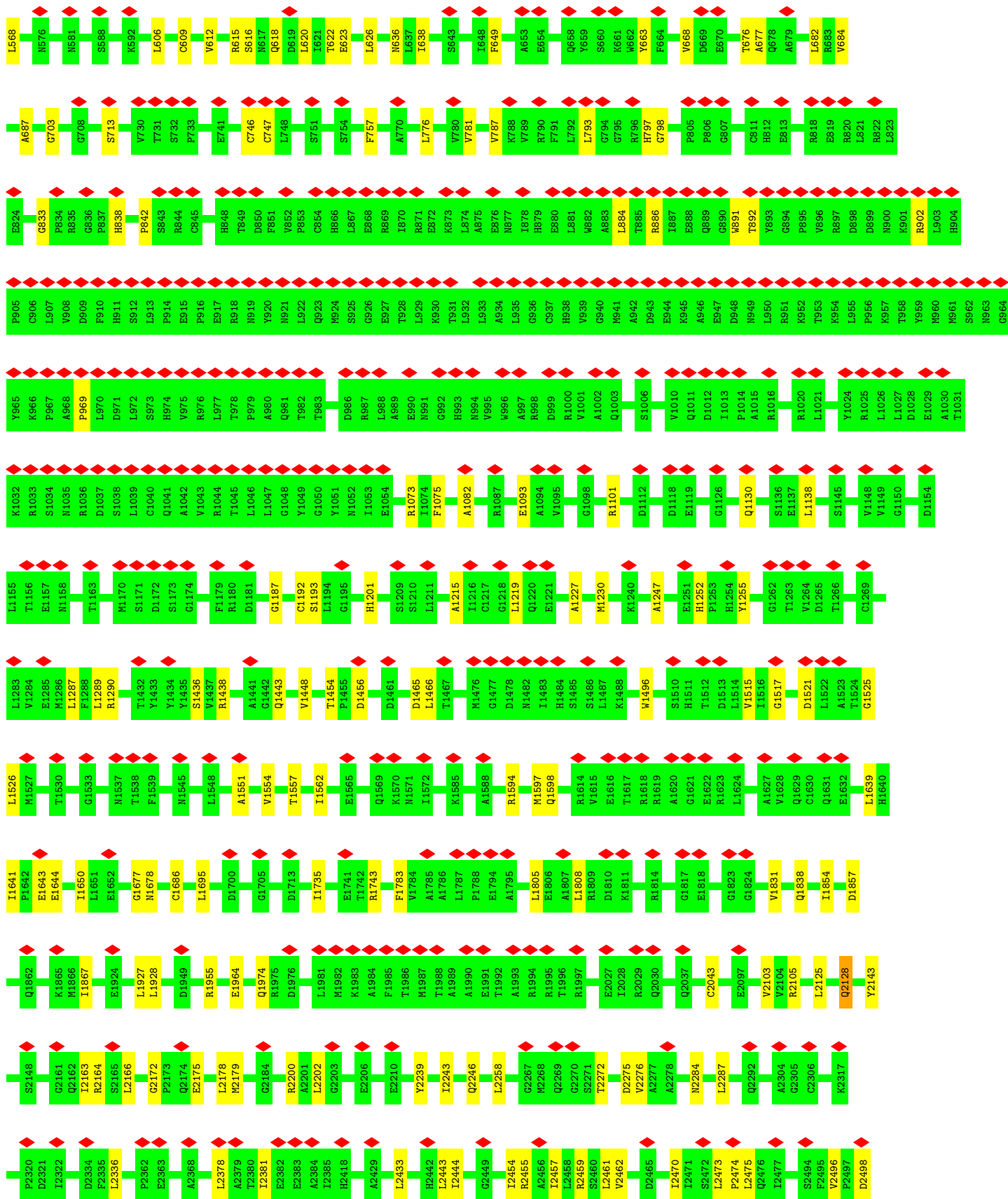


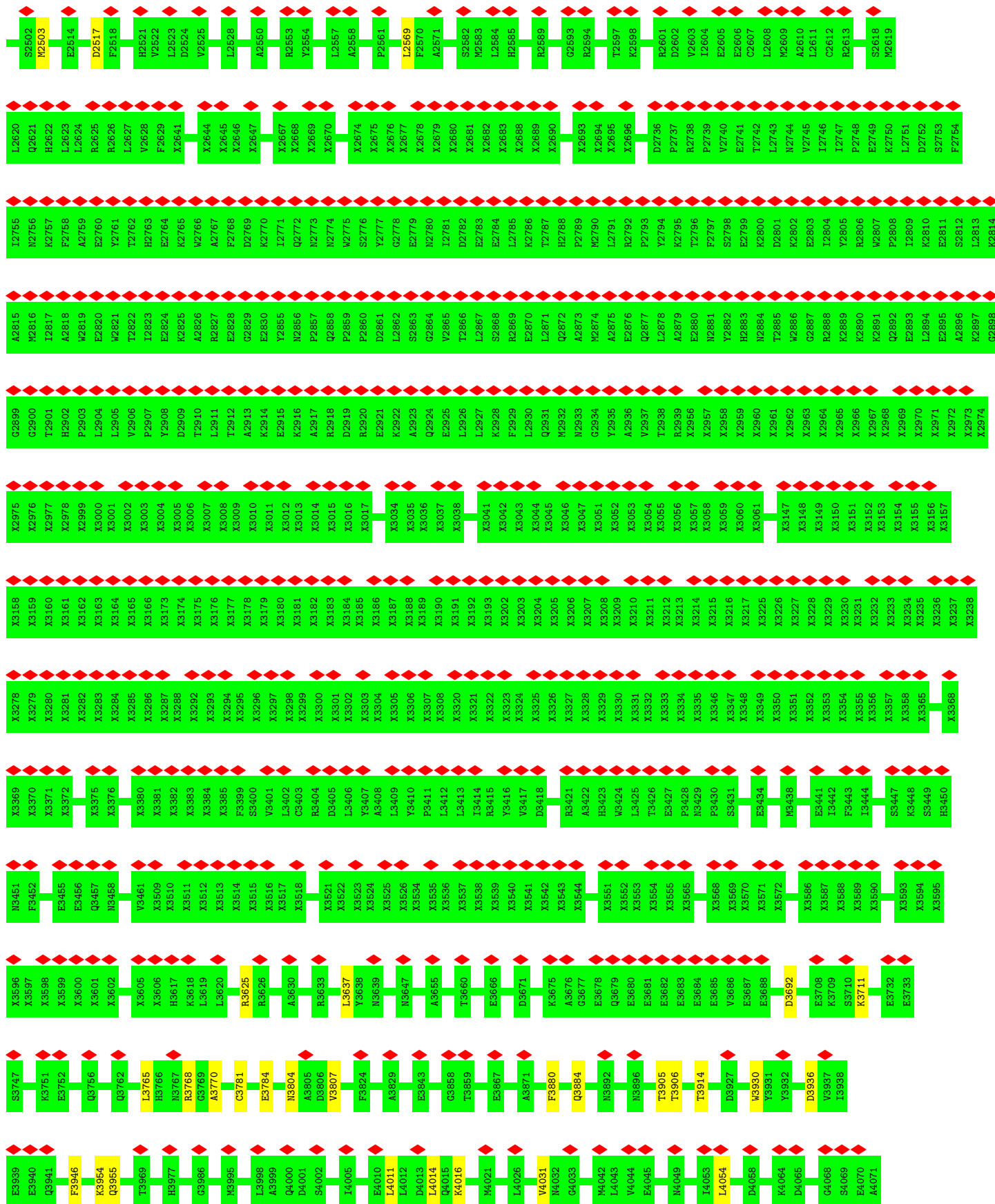
- Molecule 2: Ryanodine Receptor

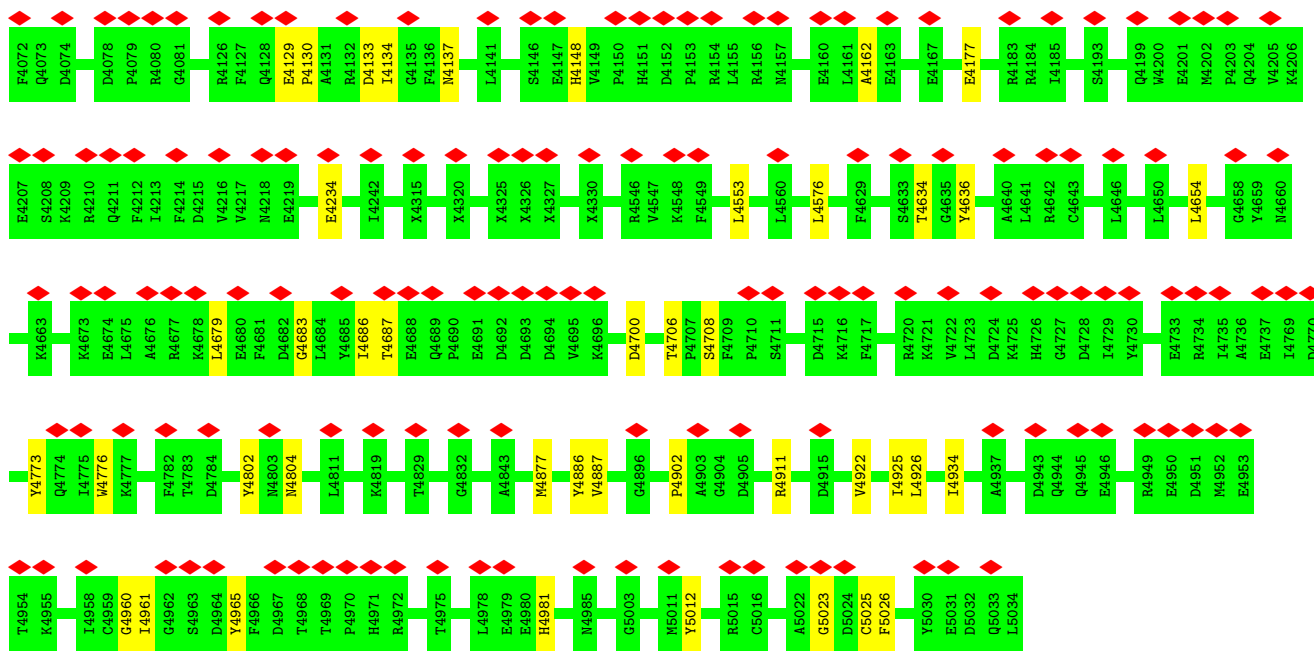




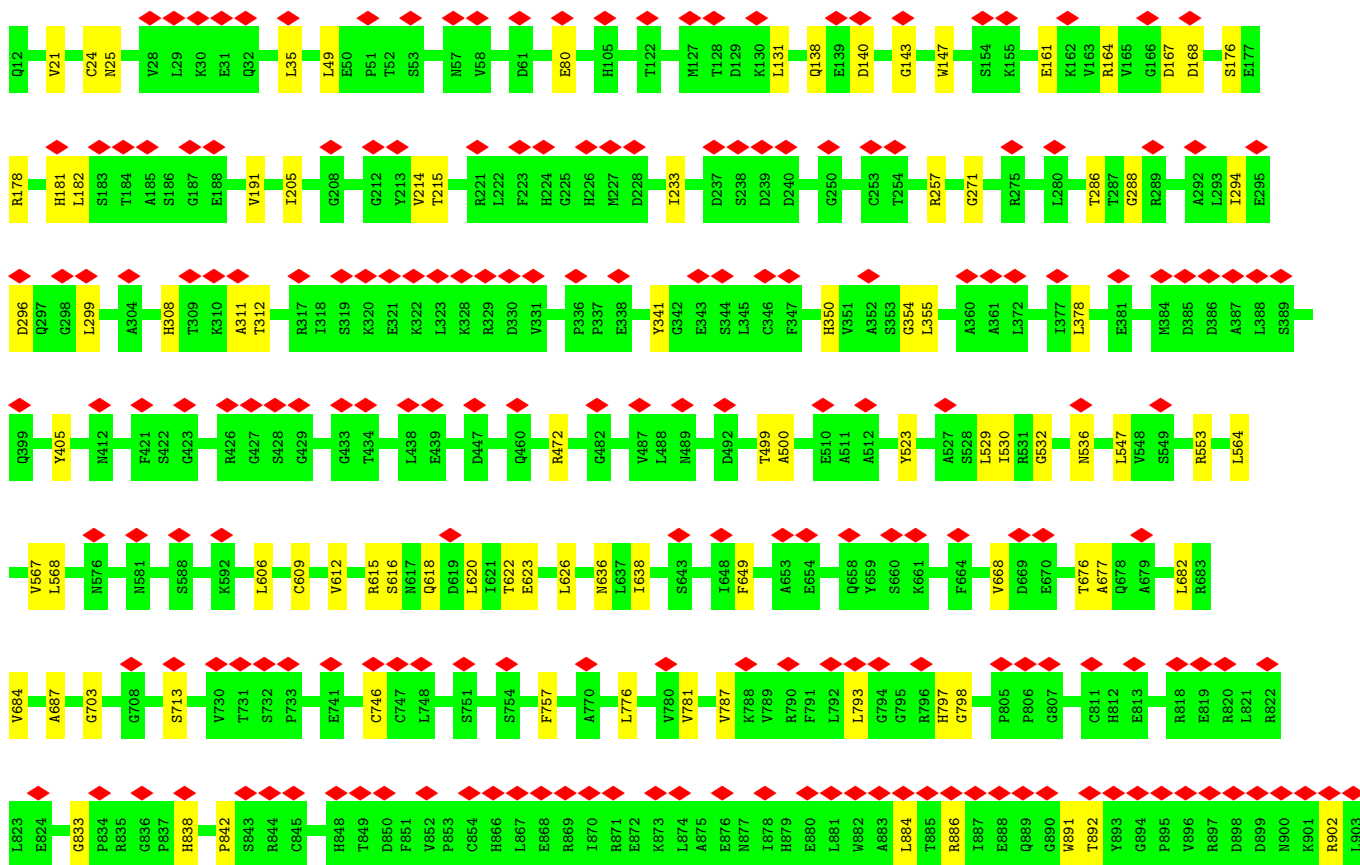
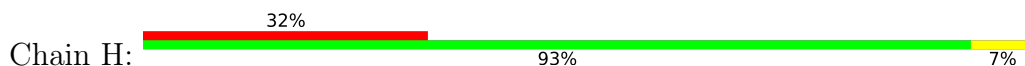






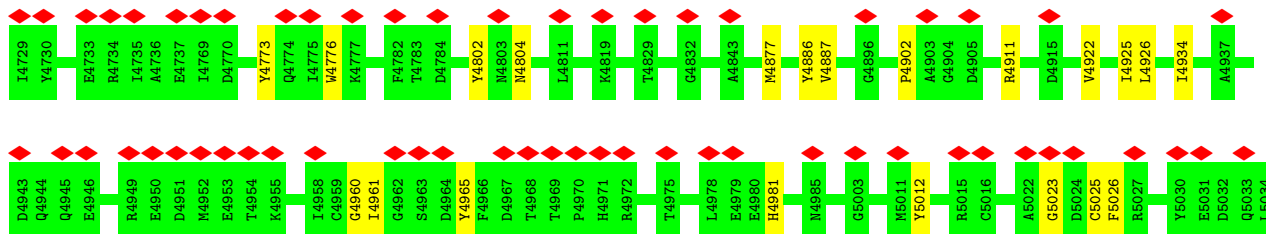


● Molecule 2: Ryanodine Receptor

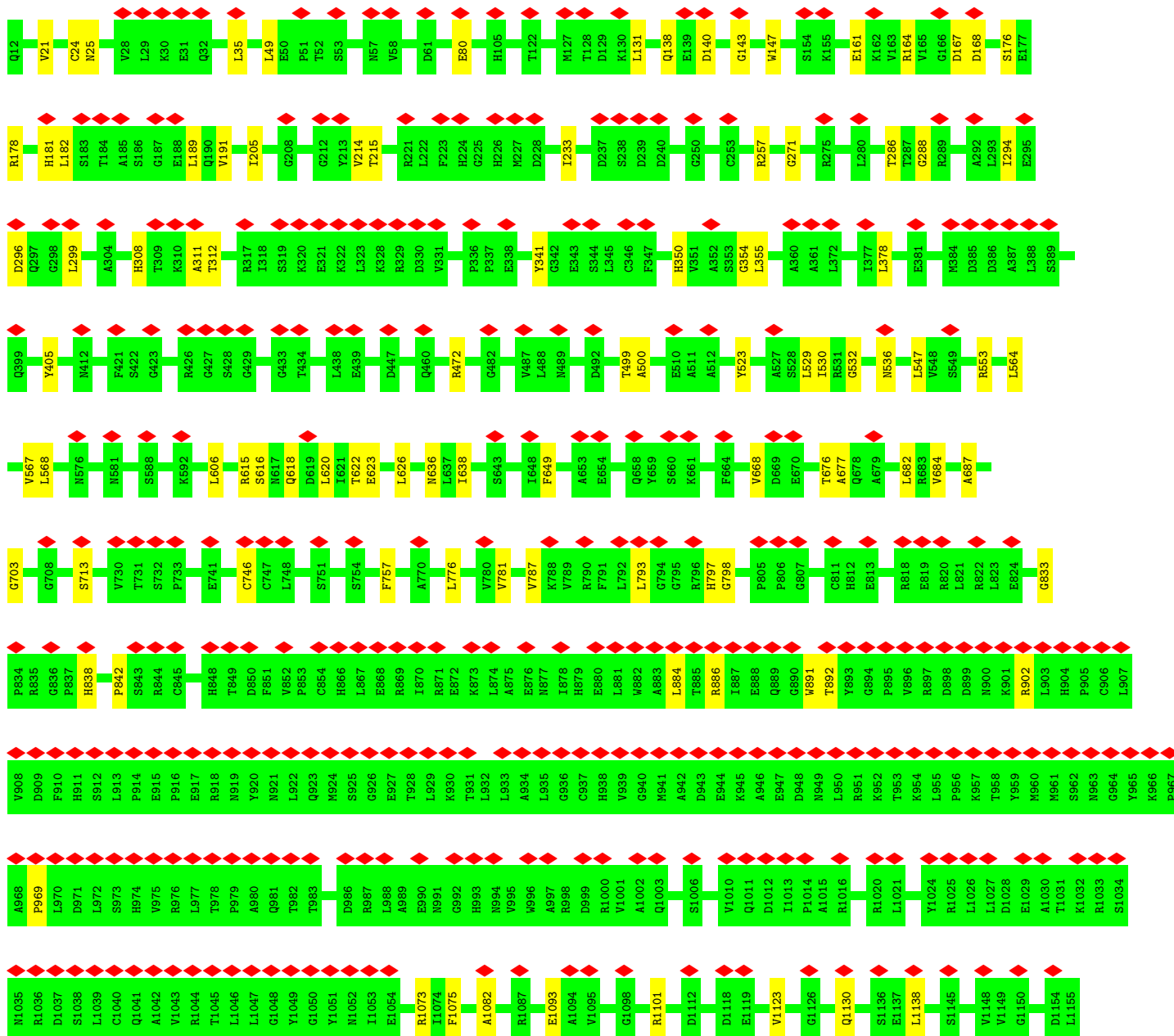
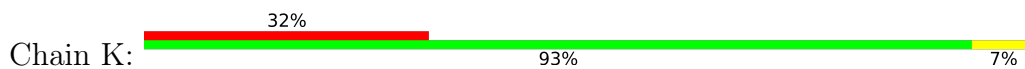


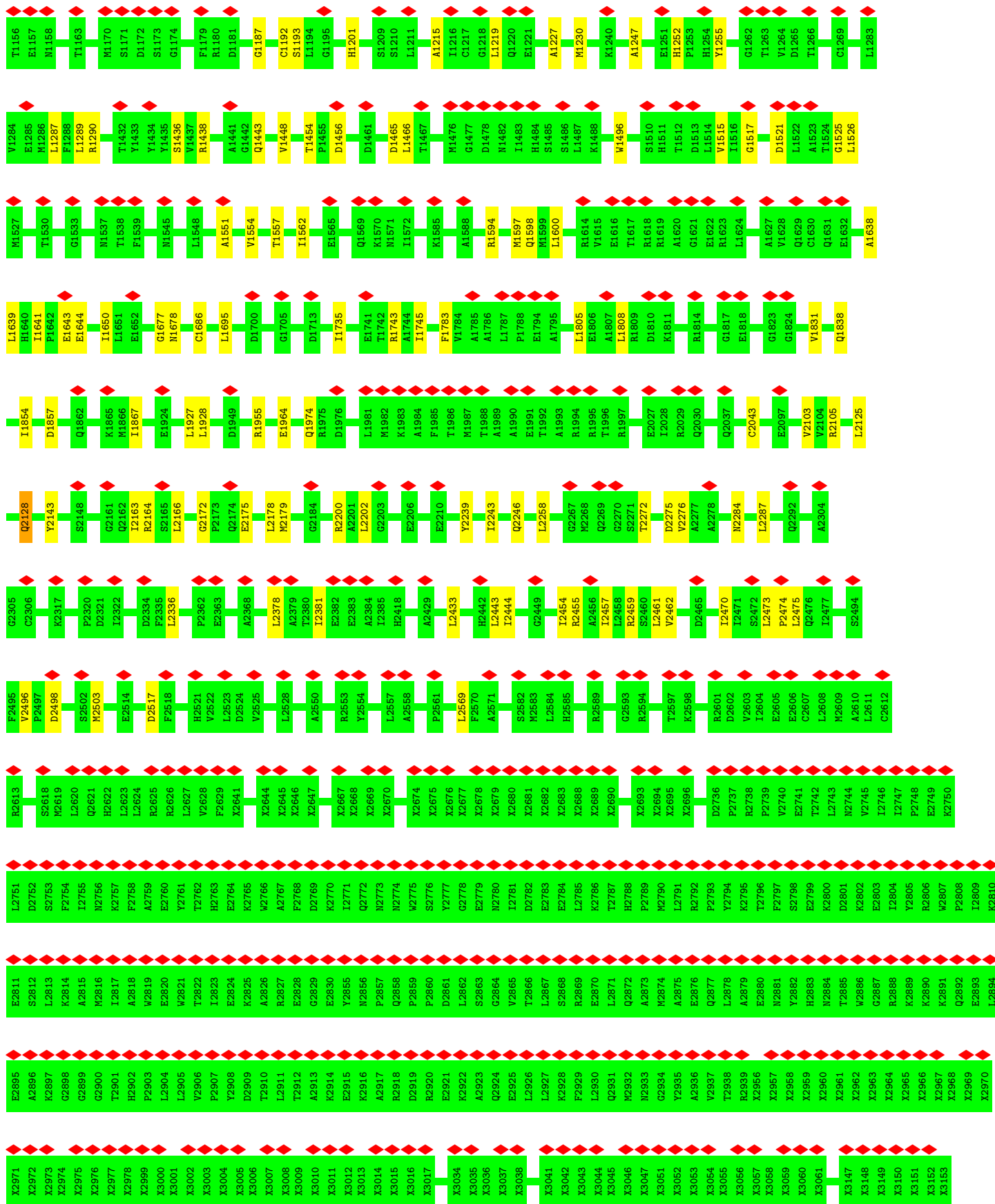
H904	P905	C906	L907	V908	D909	F910	H911	S912	L913	P914	E915	P916	E917	R918	N919	Y920	L922	Q923	M924	S925	G926	E927	T928	L929	K930	T931	L932	L933	A934	L935	G936	C937	H938	V939	G940	M941	A942	D943	E944	K945	A946	E947	D948	L950	K952	T953	K954	L955	P956	K957	T958	Y959	M960	S962	N963				
G964	Y965	K966	P967	A968	P969	L970	D971	L972	S973	H974	V975	R976	L977	T978	P979	A980	Q981	T982	T983	D986	R987	L988	A989	E990	M991	G992	H993	N994	V995	A997	R998	C999	R1000	V1001	A1002	Q1003	S1006	V1010	Q1011	D1012	I1013	P1014	A1015	R1016	R1020	L1021	Y1024	R1025	L1026	L1027	D1028	E1029	A1030						
T1031	K1032	R1033	S1034	N1035	R1036	D1037	S1038	L1039	C1040	Q1041	A1042	V1043	R1044	T1045	L1046	L1047	G1048	Y1049	G1050	Y1051	N1052	I1053	E1054	R1073	L1074	F1075	A1082	R1087	E1093	A1094	V1095	G1098	R1100	V1101	Q1103	D1112	D1118	E1119	G1126	Q1130	S1136	E1137	L1138	S1145	V1148	V1149	G1150												
D1154	L1155	T1156	E1157	M1158	T1163	M1170	S1171	D1172	S1173	G1174	F1179	R1180	D1181	G1187	C1192	S1193	L1194	G1195	H1201	S1209	S1210	L1211	A1215	C1217	G1218	L1219	Q1220	E1221	A1227	M1230	K1240	A1247	E1251	H1252	P1253	Y1255	G1262	T1263	V1264	D1265	T1266	C1269																	
L1283	V1284	E1285	M1286	L1287	L1289	R1290	T1432	Y1433	Y1434	Y1435	S1436	V1437	R1438	A1441	G1442	Q1443	V1448	T1454	P1455	D1456	D1461	D1465	L1466	T1467	M1476	G1477	D1478	M1482	T1483	H1484	S1485	S1486	L1487	K1488	M1496	D1499	S1510	H1511	T1512	L1513	V1515	I1516	G1517	D1521	L1522														
A1523	T1524	G1525	L1526	M1527	T1530	G1533	M1537	T1538	F1539	M1545	L1548	A1551	V1554	T1557	I1562	E1565	Q1569	K1570	M1571	I1572	K1586	A1588	R1594	M1597	Q1598	R1614	V1615	E1616	T1617	R1618	R1619	A1620	G1621	E1622	R1623	L1624	A1627	V1628	Q1629	C1630	Q1631	E1632																	
L1639	H1640	I1641	P1642	E1643	E1644	I1650	L1651	E1652	G1677	M1678	C1686	L1695	D1700	G1705	D1713	I1735	E1741	T1742	R1743	A1744	I1745	H1777	V1784	A1785	A1786	L1787	P1788	E1794	A1795	L1799	L1805	E1806	A1807	L1808	R1809	D1810	K1811	R1814	G1817	E1818	G1823	G1823																	
G1824	V1831	S1834	F1837	Q1838	I1854	D1857	Q1862	K1865	M1866	I1867	E1924	L1927	L1928	D1949	R1955	E1964	Q1974	R1975	D1976	L1981	M1982	K1983	A1984	F1985	T1986	M1987	A1988	A1990	E1991	T1992	A1993	R1994	R1995	T1996	K1997	E2027	I2028	R2029	Q2030	Q2037	C2043																		
E2097	V2103	V2104	R2105	L2125	Q2128	Y2143	S2148	G2161	Q2162	I2163	R2164	S2165	L2166	G2172	P2173	Q2174	E2175	L2178	M2179	G2184	R2200	A2201	L2202	G2203	E2206	E2210	Y2239	L2243	Q2246	G2267	M2268	Q2269	G2270	S2271	T2272	D2275	A2278	M2284																					
L2287	Q2292	A2304	G2305	C2306	K2317	P2320	D2321	L2322	D2334	F2335	L2336	P2362	E2363	A2368	L2378	A2379	T2380	R2381	E2382	E2383	A2384	L2385	H2418	A2429	L2433	H2442	L2443	L2444	G2449	I2454	R2455	A2456	L2457	L2458	R2459	S2460	L2461	V2462	D2465	I2470	L2471	S2472	L2473	Y2474															
L2475	Q2476	I2477	S2494	F2495	V2496	P2497	D2498	S2502	M2503	E2514	D2517	F2518	H2521	V2522	L2523	D2524	V2525	L2528	A2550	R2553	Y2554	L2557	A2558	P2561	L2569	F2570	A2571	S2582	M2583	L2584	H2585	R2589	G2593	R2594	T2597	K2598	R2601	D2602	V2603	I2604	L2605	E2606	C2607																
L2608	M2609	A2610	L2611	C2612	R2613	S2618	M2619	L2620	Q2621	L2622	L2623	L2624	R2625	R2626	L2627	V2628	F2629	E2641	X2644	X2645	X2646	X2647	X2667	X2668	X2669	X2670	X2674	X2675	X2676	X2677	X2678	X2679	X2680	X2681	X2682	X2683	X2688	X2689	X2690	X2693	X2694	X2695	X2696	D2736	P2737	R2738	P2739	V2740	E2741	T2742	L2743	M2744	V2745						
I2746	I2747	P2748	E2749	K2750	L2751	D2752	S2753	F2754	I2755	N2756	K2757	F2758	A2759	E2760	Y2761	T2762	H2763	E2764	K2765	W2766	A2767	F2768	D2769	K2770	I2771	Q2772	N2773	N2774	W2775	S2776	Y2777	G2778	E2779	N2780	I2781	D2782	E2783	E2784	L2785	K2786	T2787	H2788	P2789	M2790	L2791	R2792	P2793	Y2794	K2795	T2796	F2797	S2798	E2799	K2800	D2801	K2802	E2803	I2804	Y2805

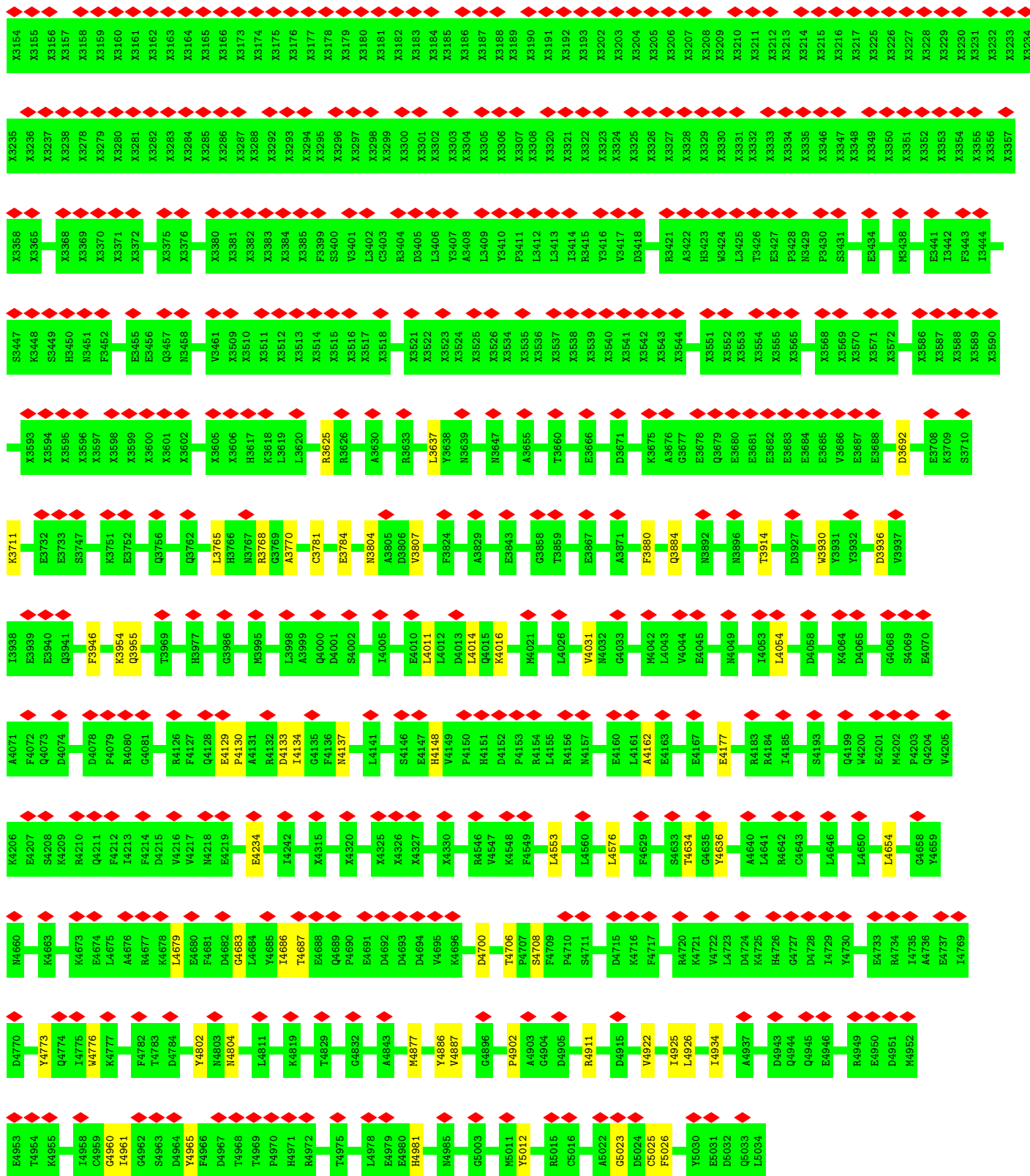
L4646	L4650	L4654	G4658	Y4659	M4660	K4663	K4673	E4674	L4675	A4676	R4677	K4678	L4679	E4680	F4681	D4682	C4683	L4684	Y4685	L4686	D4687	E4688	Q4689	F4690	E4691	D4692	D4693	D4694	V4695	K4696	D4700	T4706	F4707	S4708	F4709	P4710	S4711	D4715	K4716	F4717	R4720	S4633	T4634	Y4636	A4640	L4641	R4642	C4643	D4728																													
D4058	K4064	D4065	G4068	S4069	E4070	F4071	A4072	Q4073	D4074	D4078	P4079	R4080	G4081	R4126	F4127	Q4128	P4129	A4130	A4131	R4132	D4133	A3999	Q4000	D4001	S4002	I4003	E4010	L4011	L4012	D4013	L4014	D4015	K4016	M4021	L4026	M4032	G4033	M4042	L4043	V4044	E4045	M4049	E4167	E4177	R4183	R4184	L4185																															
S4193	Q4199	E4200	M4201	M4202	P4203	Q4204	V4205	K4206	E4207	S4208	K4209	R4210	Q4211	F4212	L4213	F4214	D4215	V4216	V4217	M4218	E4219	E4234	L4242	X4315	X4320	X4325	X4326	X4327	X4330	R4546	V4547	K4548	F4549	L4553	L4560	L4576	F4629	S4633	T4634	Y4636	A4640	L4641	R4642	C4643																																		
Y3917	D3927	K3930	Y3931	Y3932	V3937	I3938	E3939	E3940	Q3941	F3946	K3954	Q3955	T3969	H3977	G3986	M3995	L3998	A3999	Q4000	D4001	S4002	I4003	E4010	L4011	L4012	D4013	L4014	D4015	K4016	M4021	L4026	M4032	G4033	M4042	L4043	V4044	E4045	M4049	E4167	E4177	R4183	R4184	L4185																																			
E3687	E3688	D3692	K3708	K3709	S3710	K3711	E3732	E3733	S3747	K3751	E3752	Q3756	Q3762	L3765	H3766	N3767	K3768	G3769	A3770	C3781	E3784	N3804	A3805	D3806	V3807	A3829	C3834	E3843	G3858	T3859	E3867	A3871	F3880	Q3884	N3892	N3896	T3914																																									
X3586	X3587	X3588	X3589	X3590	X3593	X3594	X3595	X3596	X3597	X3598	X3599	X3600	X3601	X3602	X3605	X3606	H3617	K3618	L3619	L3620	S3621	K3622	R3624	R3625	R3626	A3630	R3633	L3637	V3638	N3639	N3647	A3655	T3660	E3666	D3671	X3643	X3644	X3651	A3676	G3677	E3678	Q3679	E3680	E3681	E3682	E3683	E3684	E3685	V3686																													
E3441	I3442	F3443	I3444	S3447	K3448	S3449	H3450	N3451	F3452	E3455	E3456	Q3457	N3458	V3461	X3509	X3510	X3511	X3512	X3513	X3514	X3515	X3516	X3517	X3518	X3521	X3522	X3523	X3524	X3525	X3526	X3534	X3535	X3536	X3537	X3538	X3539	X3540	X3541	X3542	X3543	X3544	X3551	X3552	X3553	X3554	X3555	X3556	X3566	X3569	X3570	X3571	X3572																										
X3353	X3354	X3355	X3356	X3357	X3358	X3359	X3368	X3369	X3370	X3371	X3372	X3375	X3376	X3380	X3381	X3382	X3383	X3384	X3385	F3389	S3390	V3401	L3402	C3403	R3404	D3405	L3406	V3407	A3408	V3410	F3411	L3412	L3413	L3414	R3415	V3417	D3418	R3421	A3422	H3423	W3424	L3425	T3426	E3427	P3428	N3429	F3430	S3431	E3434	H3438																												
X3230	X3231	X3232	X3233	X3234	X3235	X3236	X3237	X3238	X3278	X3279	X3280	X3281	X3282	X3283	X3284	X3285	X3286	X3287	X3288	X3292	X3293	X3294	X3295	X3296	X3297	X3298	X3299	X3300	X3301	X3302	X3303	X3304	X3305	X3306	X3307	X3308	X3320	X3321	X3322	X3323	X3324	X3325	X3326	X3327	X3328	X3329	X3330	X3331	X3332	X3333	X3334	X3335	X3346	X3347	X3348	X3349	X3350	X3351	X3352																			
X3149	X3150	X3151	X3152	X3153	X3154	X3155	X3156	X3157	X3158	X3159	X3160	X3161	X3162	X3163	X3164	X3165	X3166	X3173	X3174	X3175	X3176	X3177	X3178	X3179	X3180	X3181	X3182	X3183	X3184	X3185	X3186	X3187	X3188	X3189	X3190	X3191	X3192	X3193	X3203	X3204	X3205	X3206	X3207	X3208	X3209	X3210	X3211	X3212	X3213	X3214	X3215	X3216	X3217	X3225	X3226	X3228	X3229																					
X2966	X2967	X2968	X2969	X2970	X2971	X2972	X2973	X2974	X2975	X2976	X2977	X2978	X2979	X2980	X3000	X3001	X3002	X3003	X3004	X3005	X3006	X3007	X3008	X3009	X3010	X3011	X3012	X3013	X3014	X3015	X3016	X3017	X3034	X3035	X3036	X3037	X3038	X3041	X3042	X3043	X3044	X3045	X3046	X3047	X3051	X3052	X3053	X3054	X3055	X3056	X3057	X3058	X3059	X3060	X3061	X3147	X3148																					
K2890	K2891	Q2892	E2893	L2894	E2895	A2896	K2897	G2898	G2899	G2900	T2901	H2902	P2903	L2904	L2905	V2906	P2907	Y2908	D2909	T2910	T2911	T2912	A2913	K2914	E2915	K2916	A2917	Q2918	D2919	R2920	E2921	K2922	A2923	Q2924	E2925	L2926	L2927	K2928	F2929	L2930	Q2931	M2932	N2933	G2934	Y2935	A2936	V2937	T2938	R2939	X2956	X2957	X2958	X2959	X2960	X2961	X2962	X2963	X2964	X2965																			
R2806	W2807	F2808	L2809	K2810	E2811	S2812	L2813	K2814	A2815	H2816	L2817	A2818	W2819	E2820	W2821	T2822	L2823	E2824	K2825	A2826	L2827	E2828	Q2829	E2830	Y2835	H2836	P2837	Q2838	F2839	D2840	L2841	L2842	L2843	G2844	V2845	L2846	L2847	L2848	L2849	L2850	L2851	L2852	L2853	L2854	L2855	L2856	L2857	L2858	L2859	L2860	L2861	L2862	S2863	G2864	V2865	L2866	L2867	S2868	R2869	E2870	L2871	L2872	A2873	L2874	E2875	E2876	Q2877	L2878	A2879	E2880	H2881	Y2882	H2883	H2884	T2885	W2886	Q2887	R2888



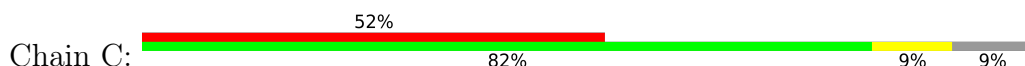
• Molecule 2: Ryanodine Receptor

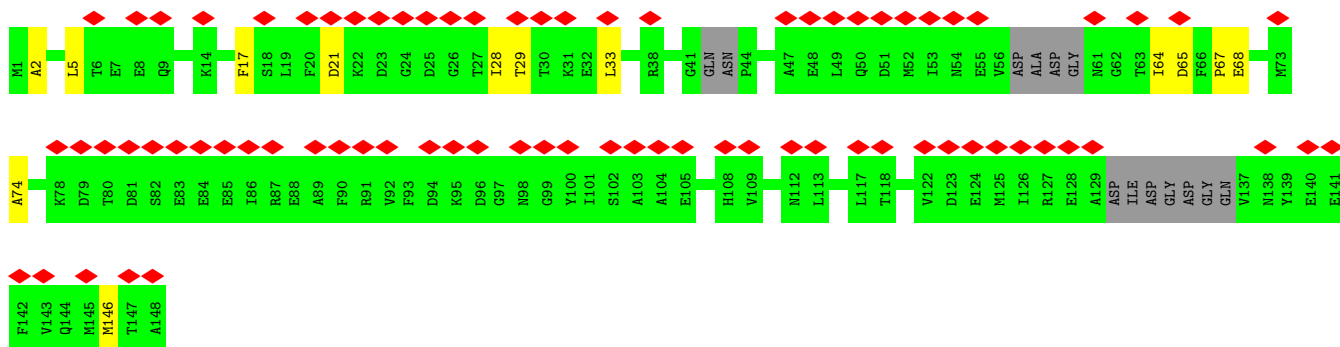




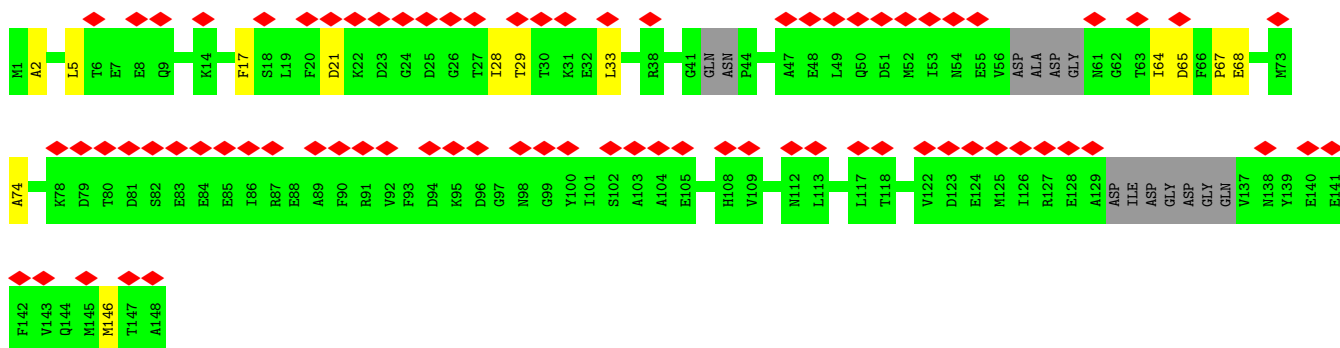
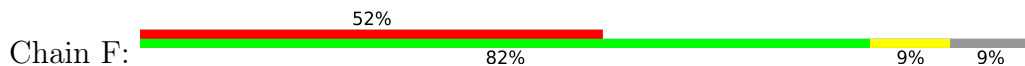


• Molecule 3: Calmodulin-1

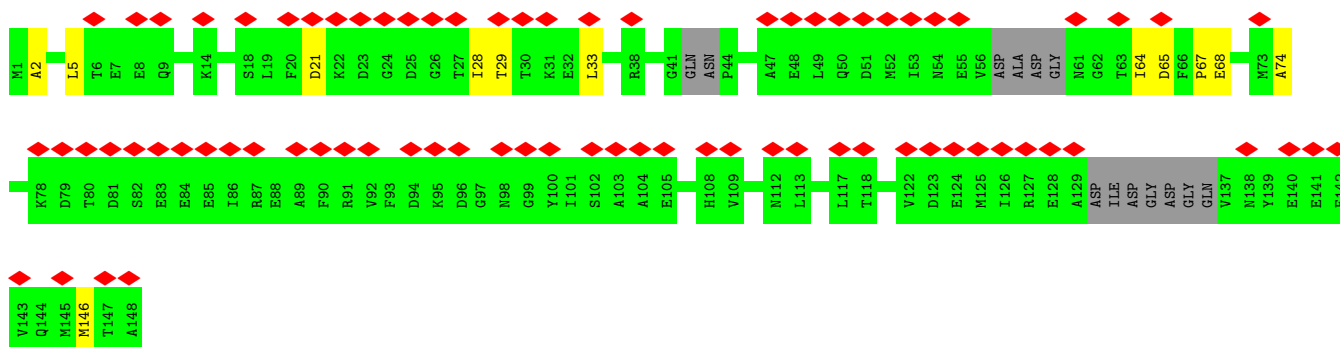
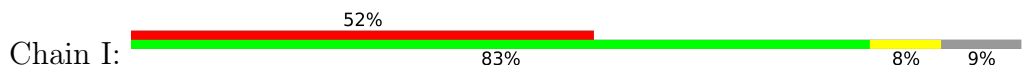




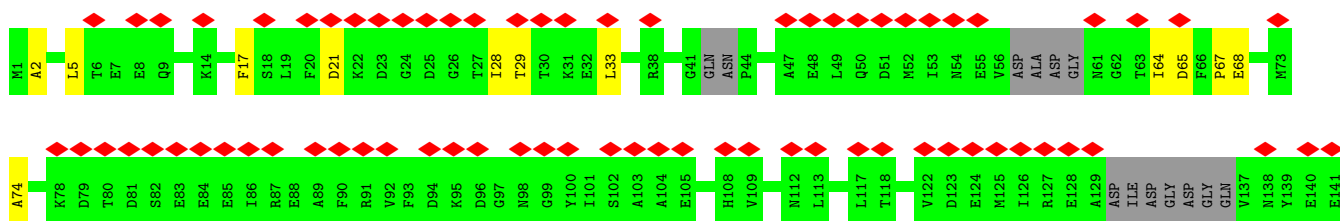
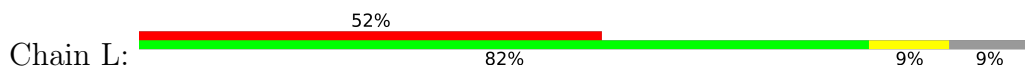
• Molecule 3: Calmodulin-1



• Molecule 3: Calmodulin-1



• Molecule 3: Calmodulin-1



F142	V143	Q144	M145	M146	T147	A148
------	------	------	------	------	------	------

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	25122	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.173	Depositor
Minimum map value	-0.136	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.022	Depositor
Map size (\AA)	523.2, 523.2, 523.2	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.09, 1.09, 1.09	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:
ZN

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	0.25	0/743	0.42	0/1014
1	D	0.25	0/743	0.42	0/1014
1	G	0.25	0/743	0.42	0/1014
1	J	0.25	0/743	0.42	0/1014
2	B	0.23	0/25353	0.38	0/34606
2	E	0.23	0/25353	0.38	0/34606
2	H	0.23	0/25353	0.38	0/34606
2	K	0.23	0/25353	0.38	0/34606
3	C	0.24	0/772	0.36	0/1059
3	F	0.24	0/772	0.36	0/1059
3	I	0.24	0/772	0.36	0/1059
3	L	0.24	0/772	0.36	0/1059
All	All	0.23	0/107472	0.38	0/146716

There are no bond length outliers.

There are no bond angle outliers.

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	727	0	651	8	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	727	0	651	8	0
1	G	727	0	651	8	0
1	J	727	0	651	8	0
2	B	26597	0	22867	156	0
2	E	26597	0	22867	153	0
2	H	26597	0	22867	157	0
2	K	26597	0	22867	157	0
3	C	768	0	486	9	0
3	F	768	0	486	9	0
3	I	768	0	486	8	0
3	L	768	0	486	9	0
4	B	1	0	0	0	0
4	E	1	0	0	0	0
4	H	1	0	0	0	0
4	K	1	0	0	0	0
All	All	112372	0	96016	654	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 3.

The worst 5 of 654 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)
2:E:886:ARG:HB2	2:E:891:TRP:HB2	1.73	0.71
2:B:886:ARG:HB2	2:B:891:TRP:HB2	1.73	0.71
2:H:886:ARG:HB2	2:H:891:TRP:HB2	1.73	0.71
2:K:886:ARG:HB2	2:K:891:TRP:HB2	1.73	0.71
2:E:4706:THR:HG21	2:E:4773:TYR:HB2	1.74	0.70

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	104/107 (97%)	98 (94%)	6 (6%)	0	100	100
1	D	104/107 (97%)	98 (94%)	6 (6%)	0	100	100
1	G	104/107 (97%)	98 (94%)	6 (6%)	0	100	100
1	J	104/107 (97%)	98 (94%)	6 (6%)	0	100	100
2	B	3396/3816 (89%)	3335 (98%)	61 (2%)	0	100	100
2	E	3396/3816 (89%)	3335 (98%)	61 (2%)	0	100	100
2	H	3396/3816 (89%)	3335 (98%)	61 (2%)	0	100	100
2	K	3396/3816 (89%)	3335 (98%)	61 (2%)	0	100	100
3	C	127/148 (86%)	124 (98%)	3 (2%)	0	100	100
3	F	127/148 (86%)	124 (98%)	3 (2%)	0	100	100
3	I	127/148 (86%)	124 (98%)	3 (2%)	0	100	100
3	L	127/148 (86%)	124 (98%)	3 (2%)	0	100	100
All	All	14508/16284 (89%)	14228 (98%)	280 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [\(i\)](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	66/88 (75%)	66 (100%)	0	100	100
1	D	66/88 (75%)	66 (100%)	0	100	100
1	G	66/88 (75%)	66 (100%)	0	100	100
1	J	66/88 (75%)	66 (100%)	0	100	100
2	B	2222/3025 (74%)	2221 (100%)	1 (0%)	100	100
2	E	2222/3025 (74%)	2221 (100%)	1 (0%)	100	100
2	H	2222/3025 (74%)	2221 (100%)	1 (0%)	100	100
2	K	2222/3025 (74%)	2221 (100%)	1 (0%)	100	100
3	C	29/126 (23%)	29 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	F	29/126 (23%)	29 (100%)	0	100	100
3	I	29/126 (23%)	29 (100%)	0	100	100
3	L	29/126 (23%)	29 (100%)	0	100	100
All	All	9268/12956 (72%)	9264 (100%)	4 (0%)	100	100

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	2128	GLN
2	E	2128	GLN
2	H	2128	GLN
2	K	2128	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
2	K	3955	GLN
2	K	2128	GLN
2	H	838	HIS
2	K	838	HIS
2	E	4981	HIS

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](#)

Of 4 ligands modelled in this entry, 4 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	B	56
2	E	56
2	H	56
2	K	56

The worst 5 of 224 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	B	4331:UNK	C	4543:GLU	N	51.24
1	E	4331:UNK	C	4543:GLU	N	51.24
1	H	4331:UNK	C	4543:GLU	N	51.24
1	K	4331:UNK	C	4543:GLU	N	51.24
1	B	1054:GLU	C	1071:ARG	N	36.98

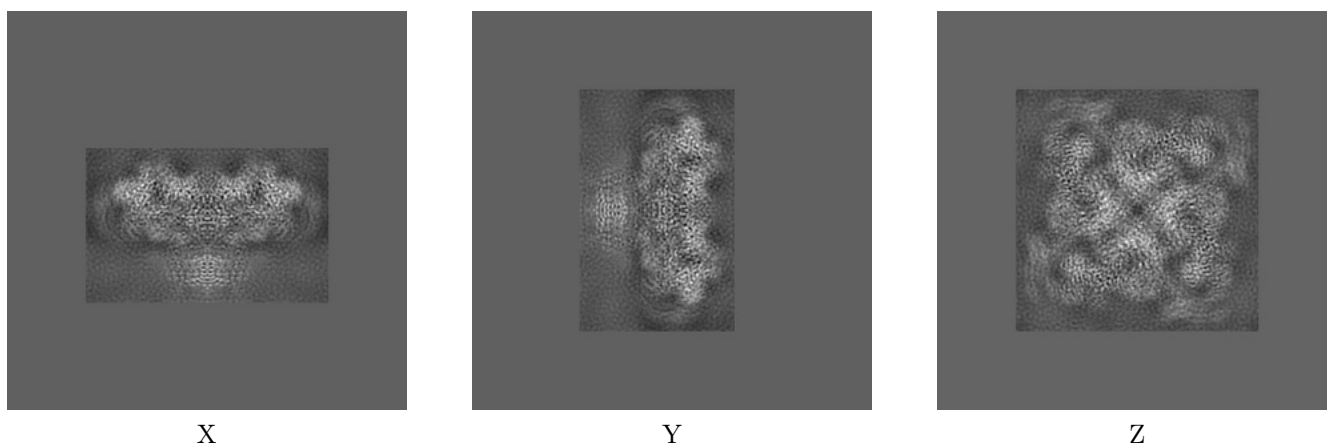
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-22016. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

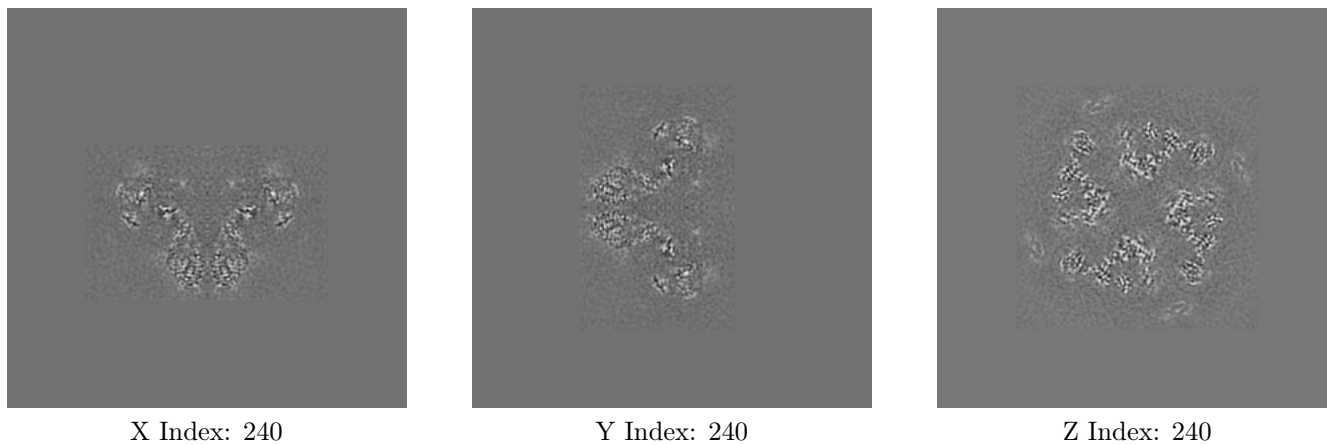
6.1.1 Primary map



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

6.2 Central slices [i](#)

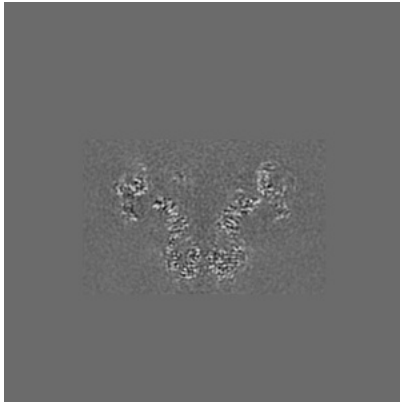
6.2.1 Primary map



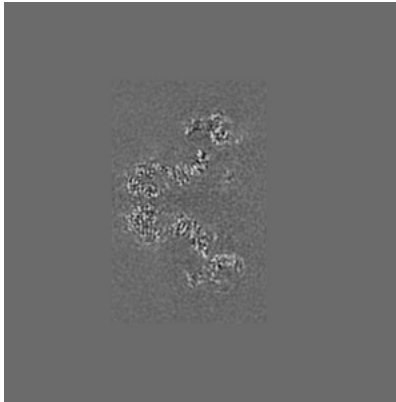
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

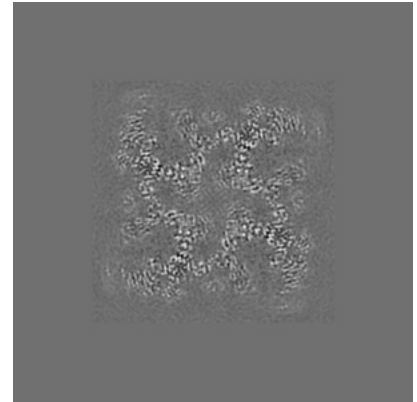
6.3.1 Primary map



X Index: 236



Y Index: 236

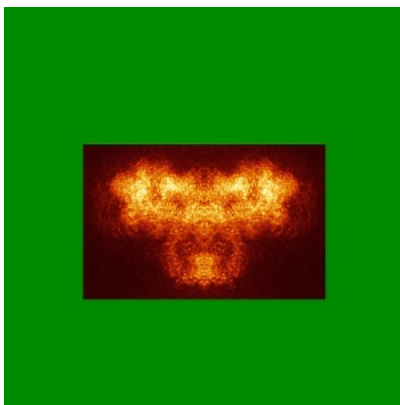


Z Index: 265

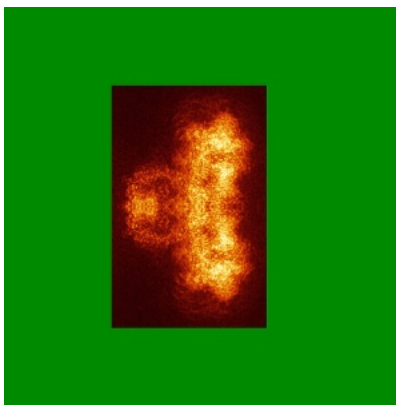
The images above show the largest variance slices of the map in three orthogonal directions.

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

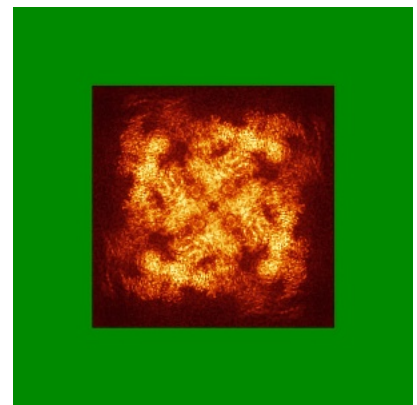
6.4.1 Primary map



X



Y

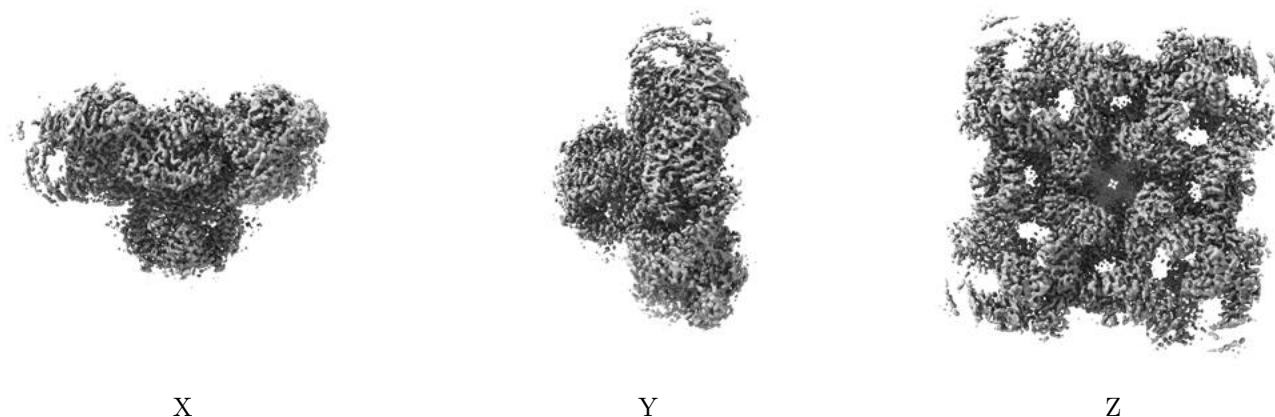


Z

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 0.022. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

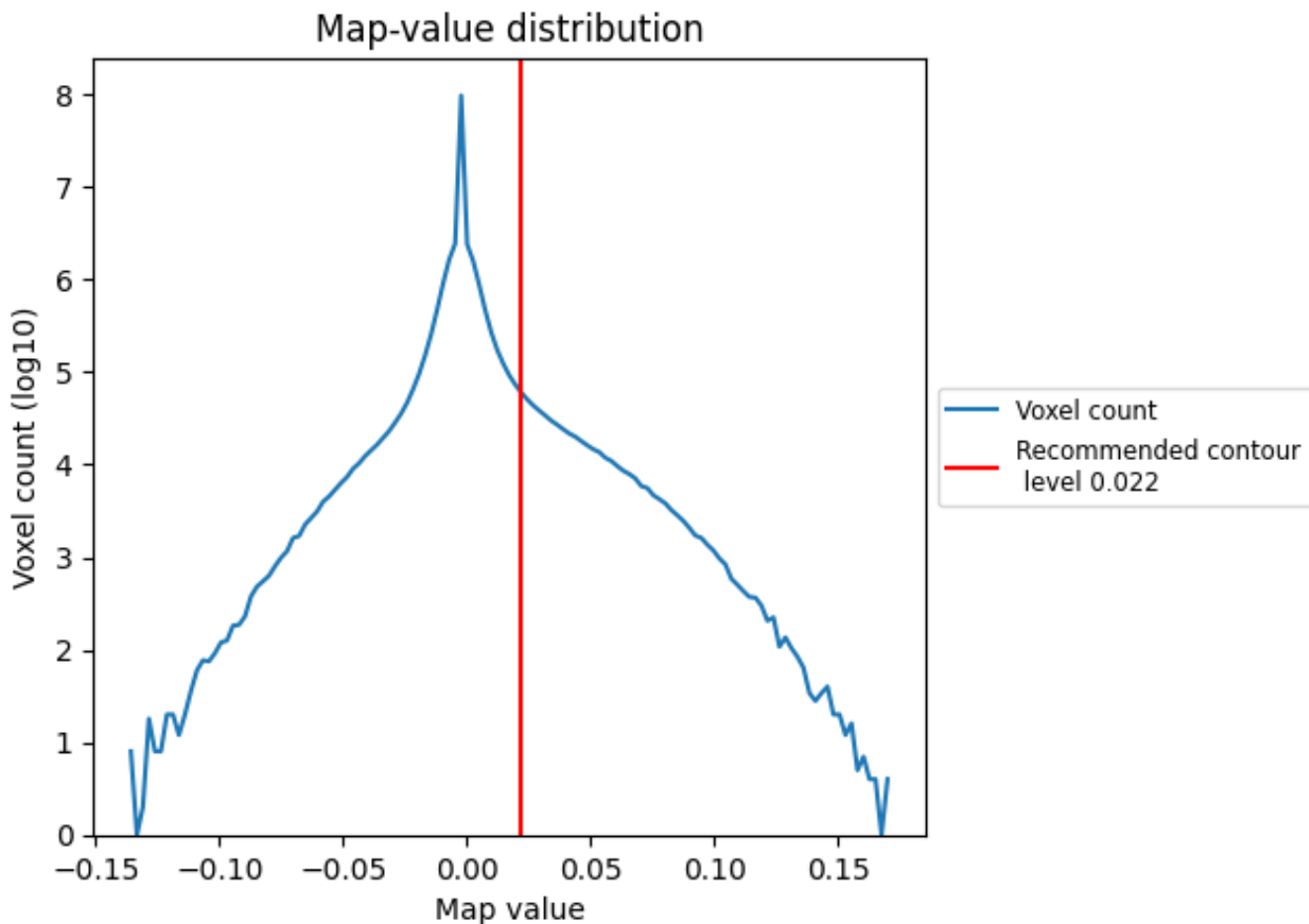
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

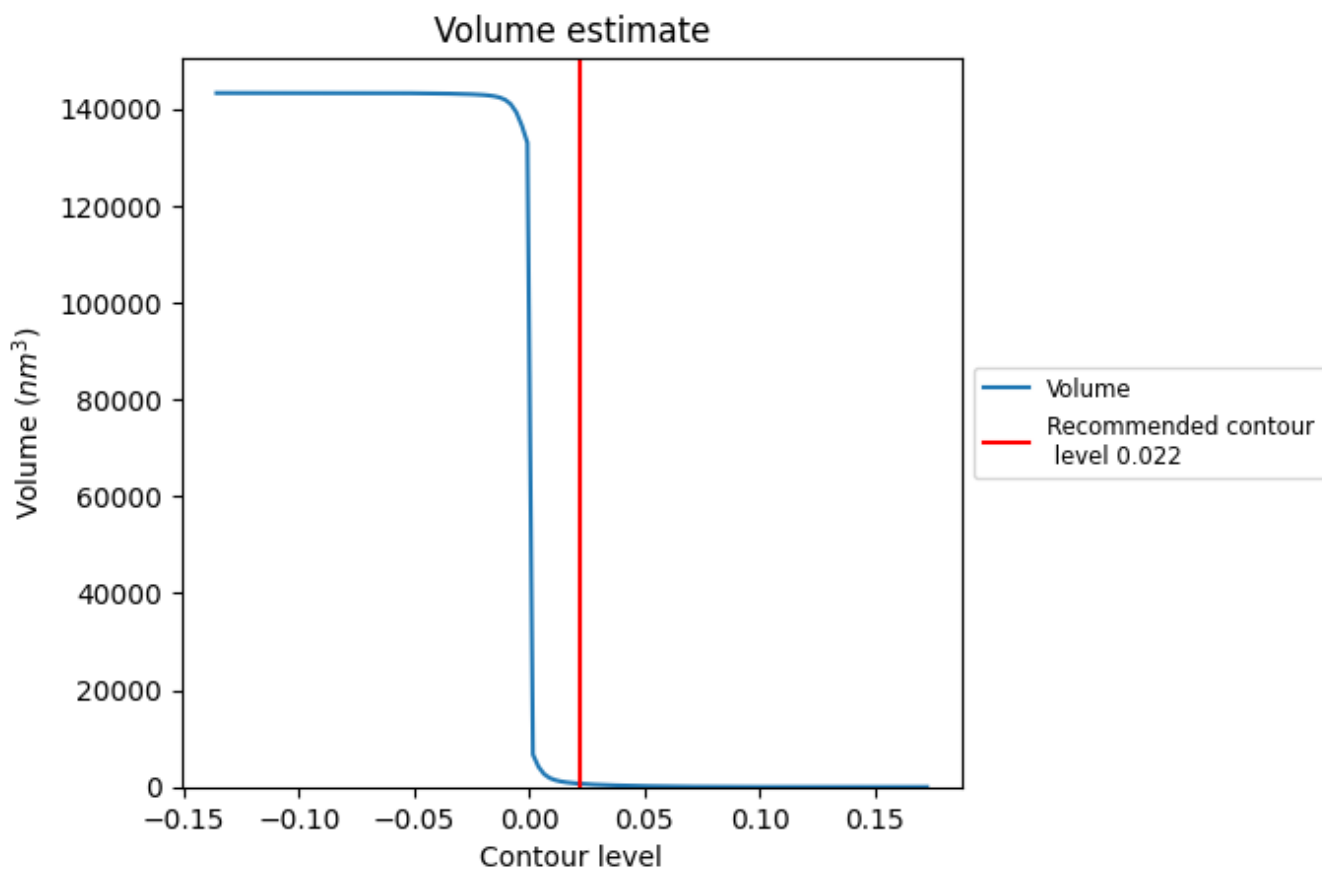
This section contains the results of statistical analysis of the map.

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.

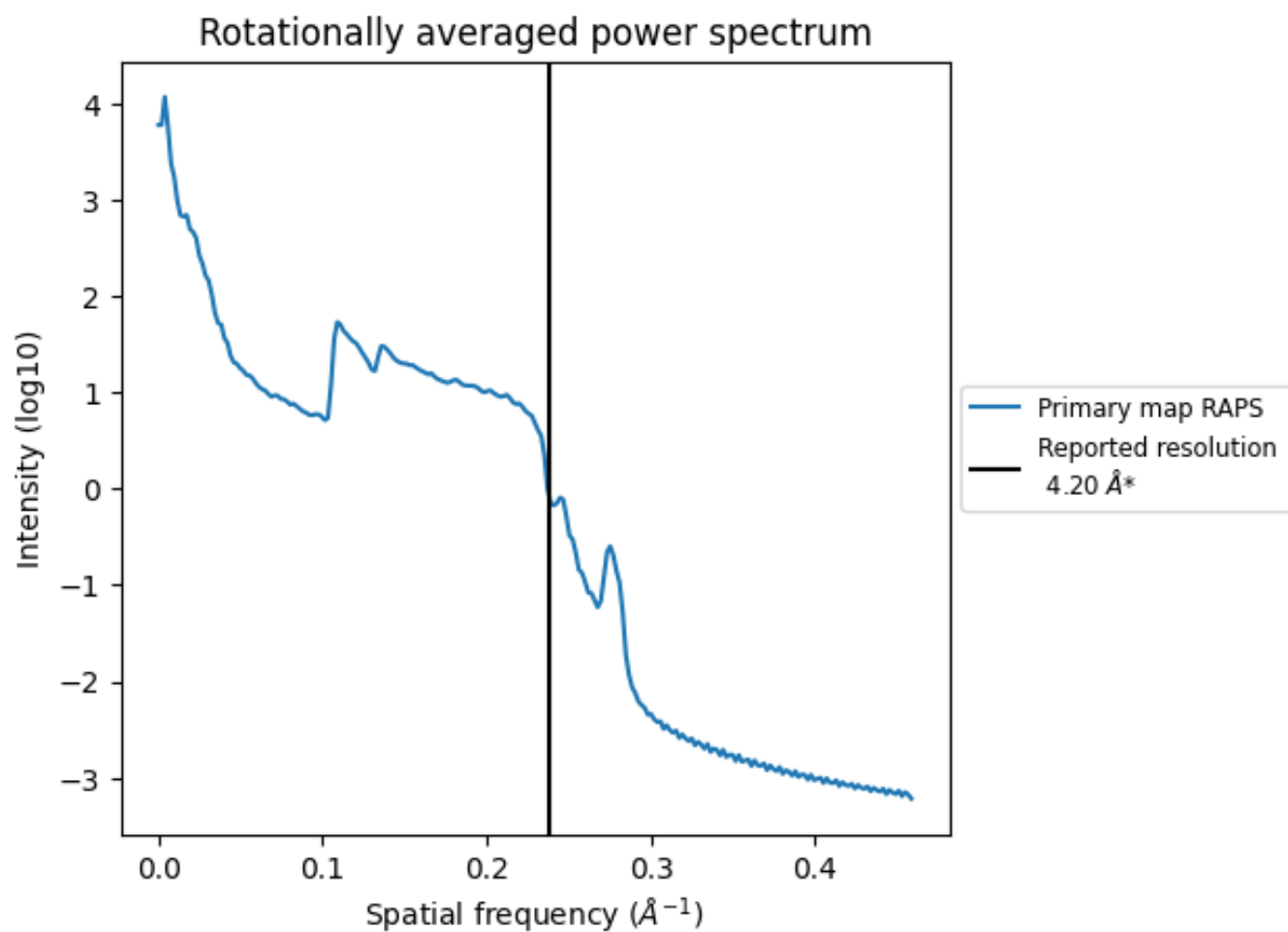
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 672 nm³; this corresponds to an approximate mass of 607 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 0.238\AA^{-1}

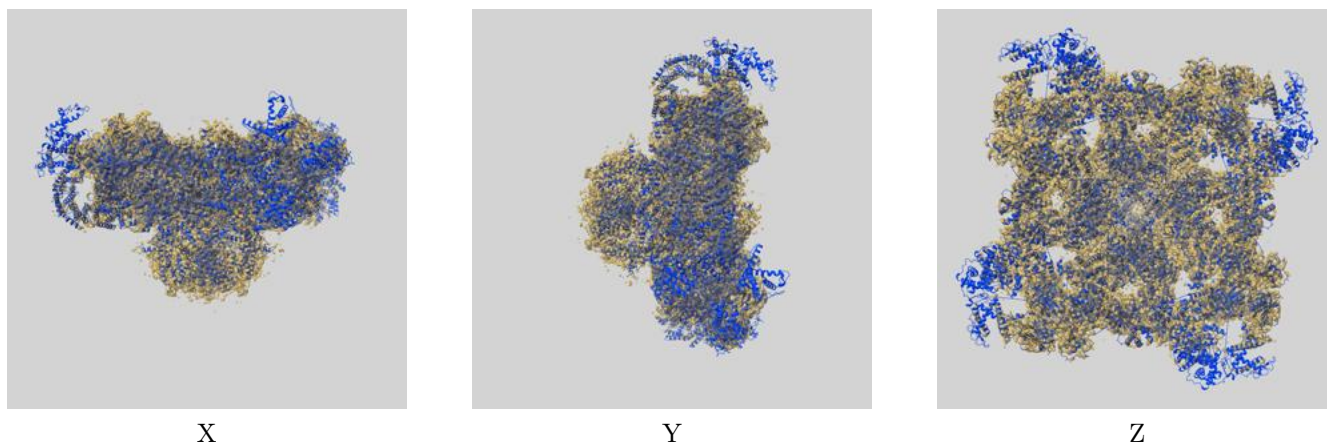
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

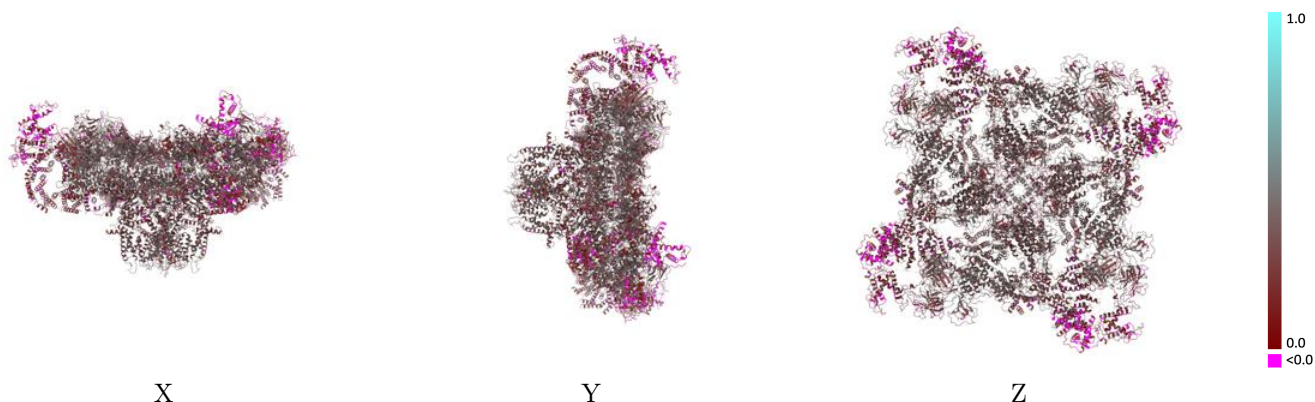
This section contains information regarding the fit between EMDB map EMD-22016 and PDB model 6X33. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay [i](#)



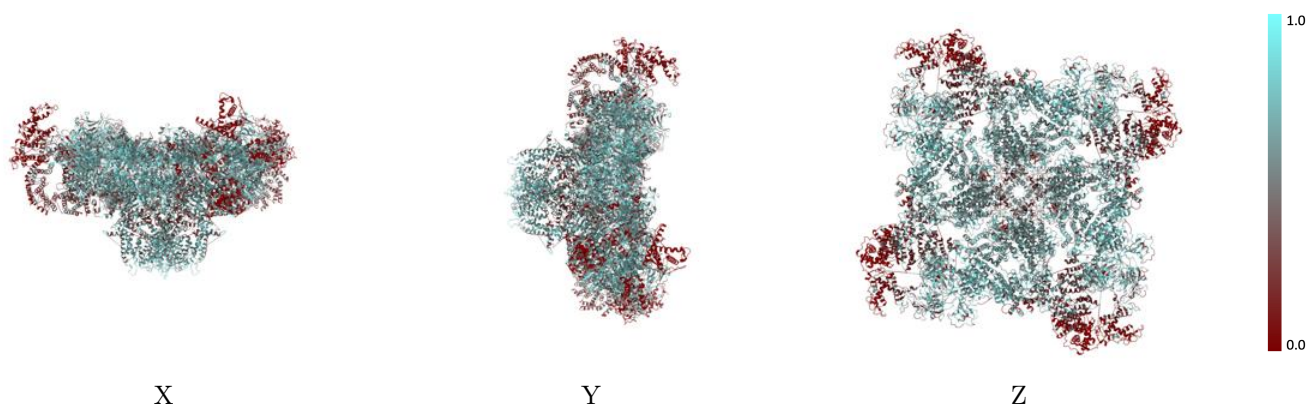
The images above show the 3D surface view of the map at the recommended contour level 0.022 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



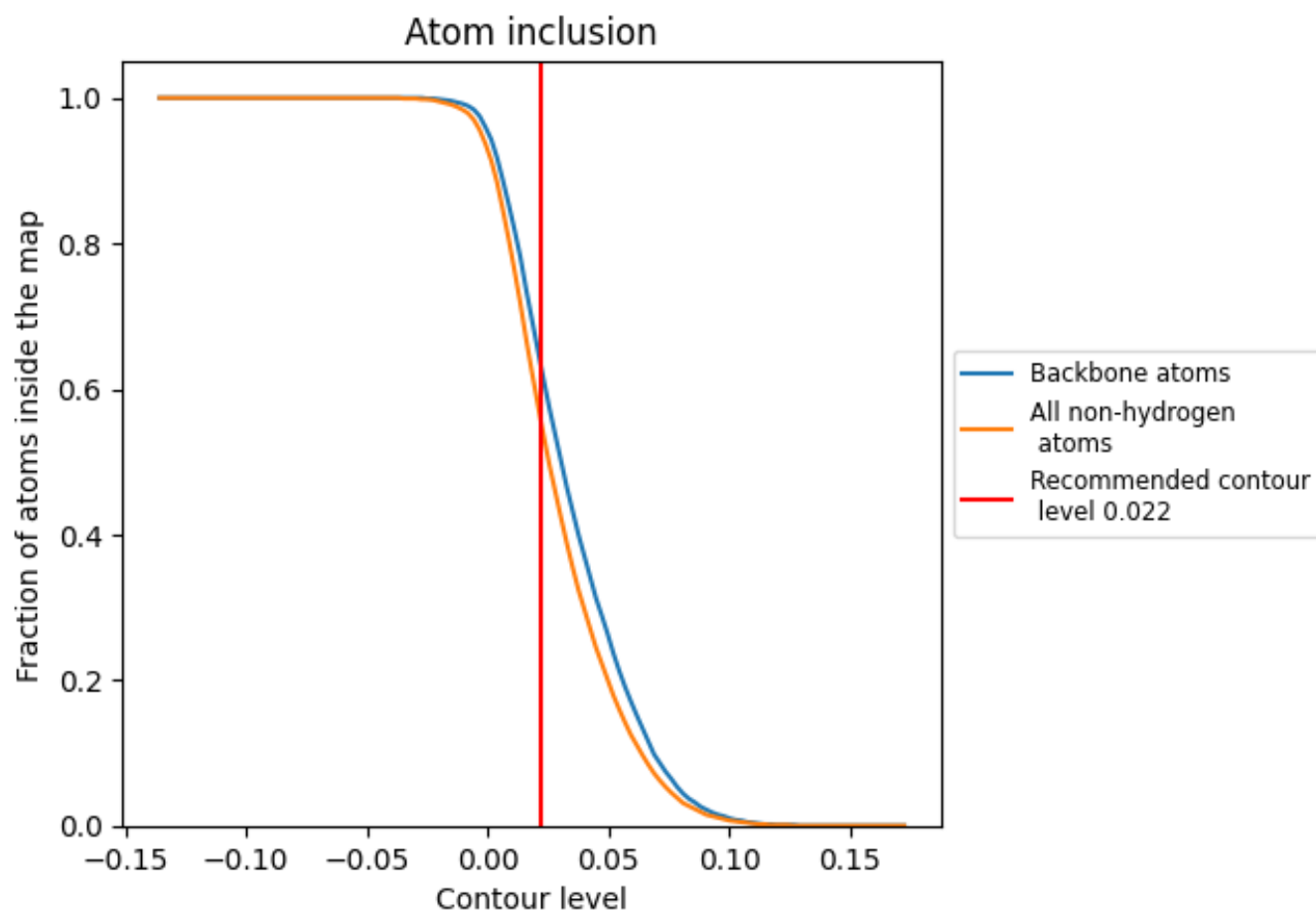
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.022).



























9.4 Atom inclusion [i](#)



At the recommended contour level, 63% of all backbone atoms, 56% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary [i](#)

The table lists the average atom inclusion at the recommended contour level (0.022) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5580	 0.3230
A	 0.6020	 0.3810
B	 0.5610	 0.3230
C	 0.4110	 0.2760
D	 0.6020	 0.3780
E	 0.5610	 0.3230
F	 0.4110	 0.2740
G	 0.6010	 0.3780
H	 0.5610	 0.3230
I	 0.4110	 0.2720
J	 0.6020	 0.3790
K	 0.5620	 0.3220
L	 0.4110	 0.2750

