



Full wwPDB EM Validation 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 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.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

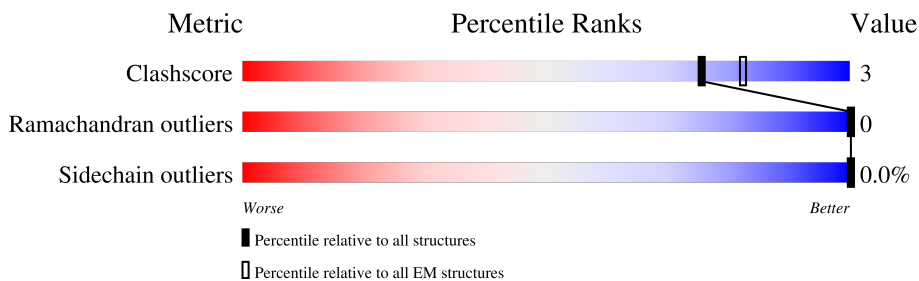
1 Overall quality at a glance i

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	
1	D	107	
1	G	107	
1	J	107	
2	B	3816	
2	E	3816	
2	H	3816	
2	K	3816	

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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

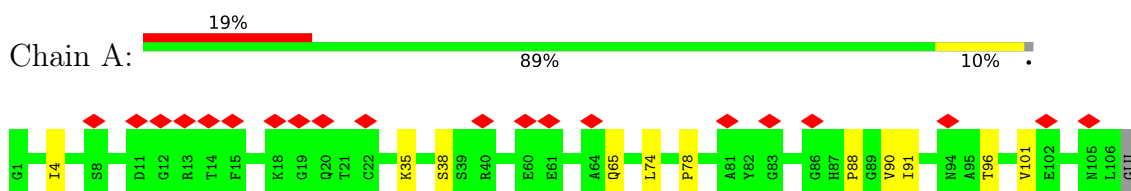
- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

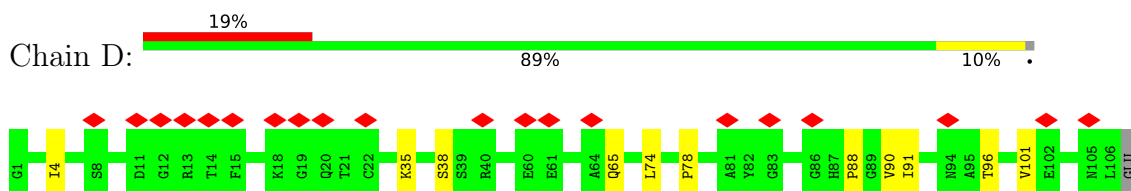
3 Residue-property plots

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.

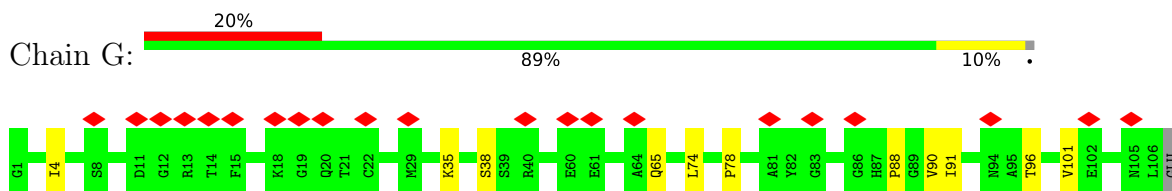
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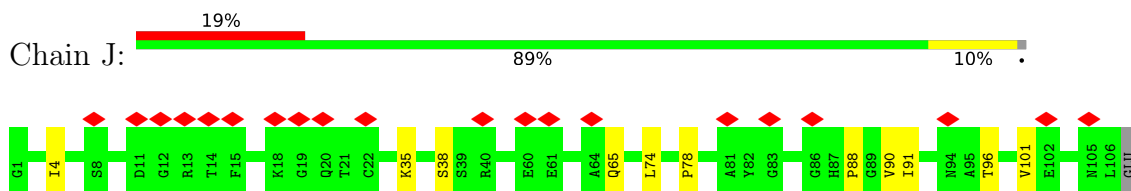
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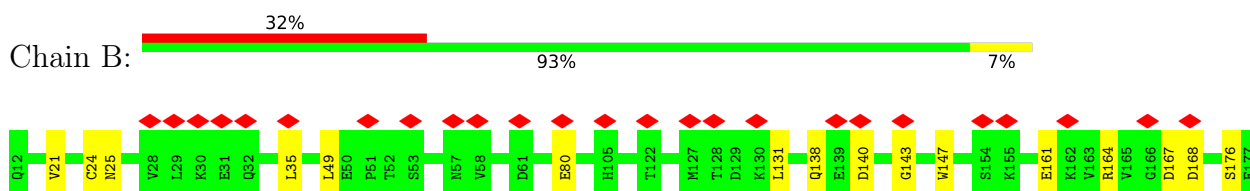
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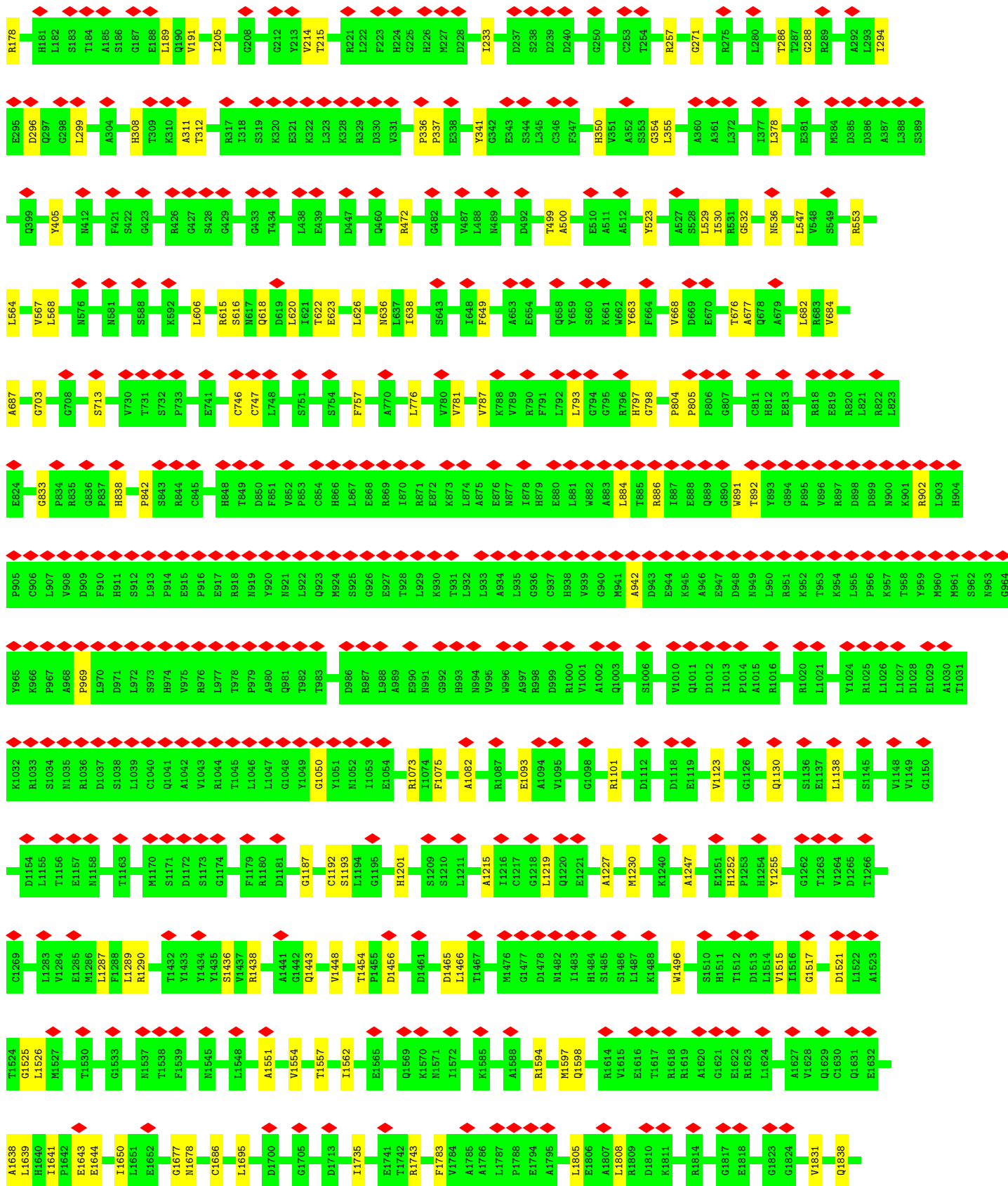


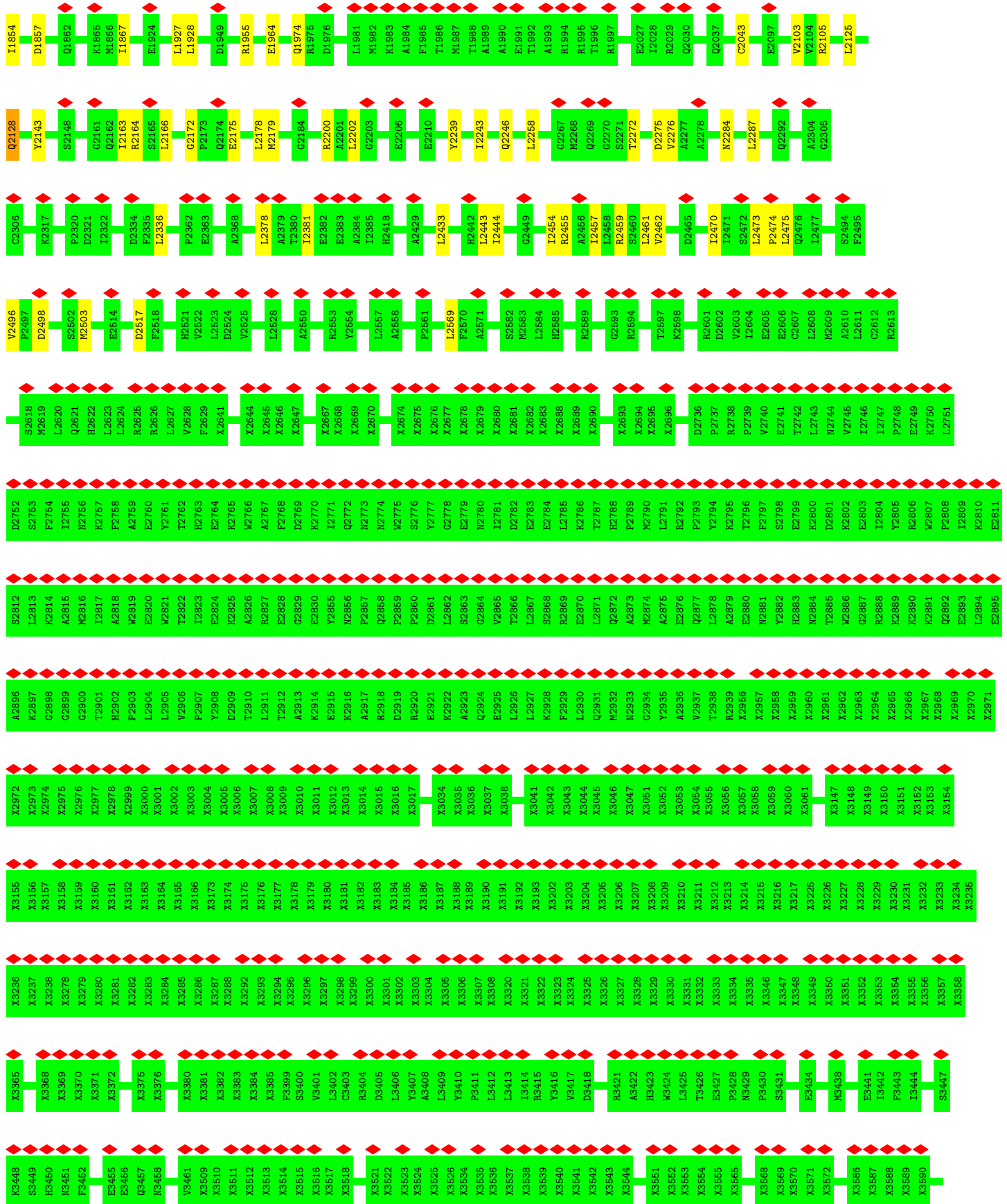
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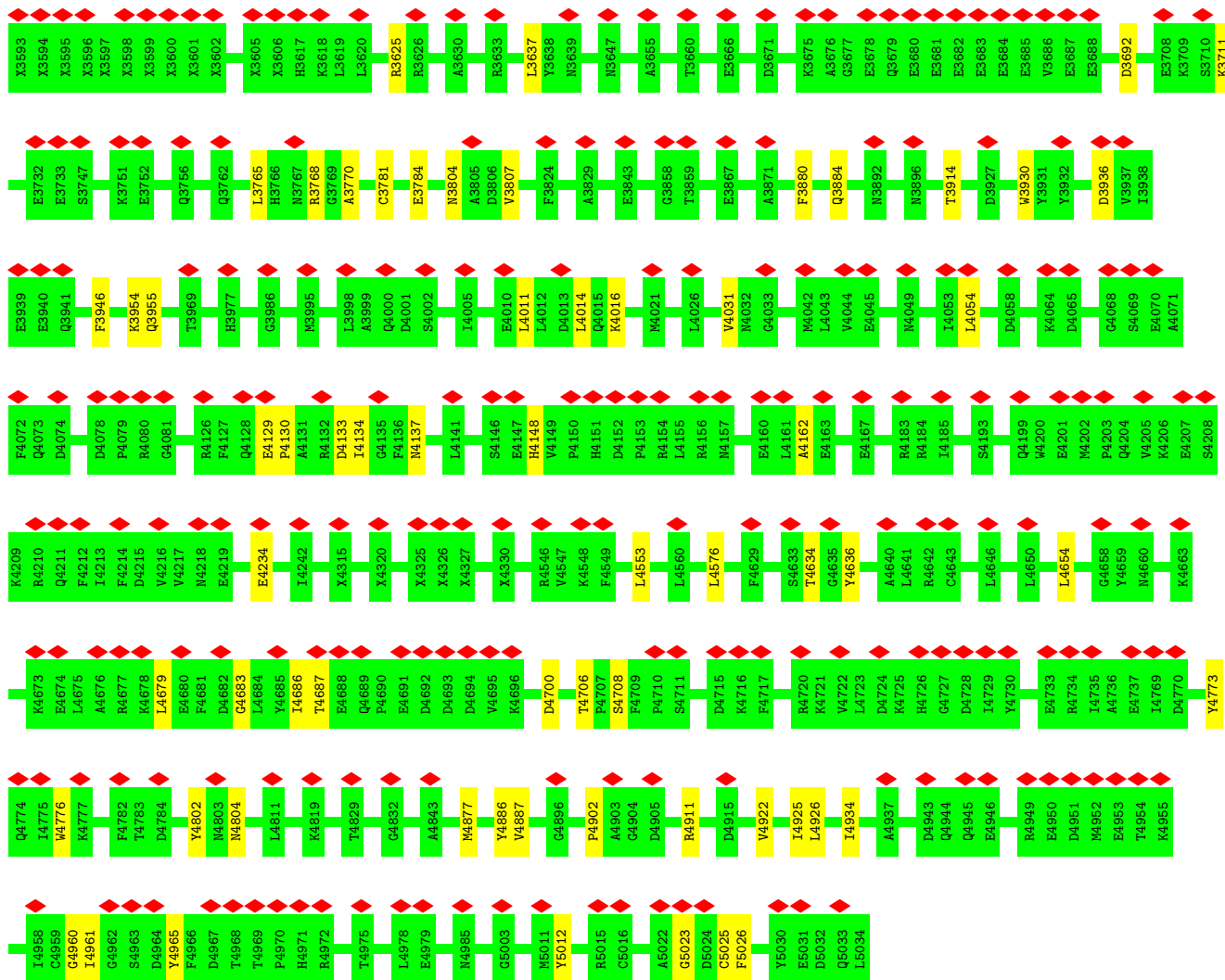


- Molecule 2: Ryanodine Receptor

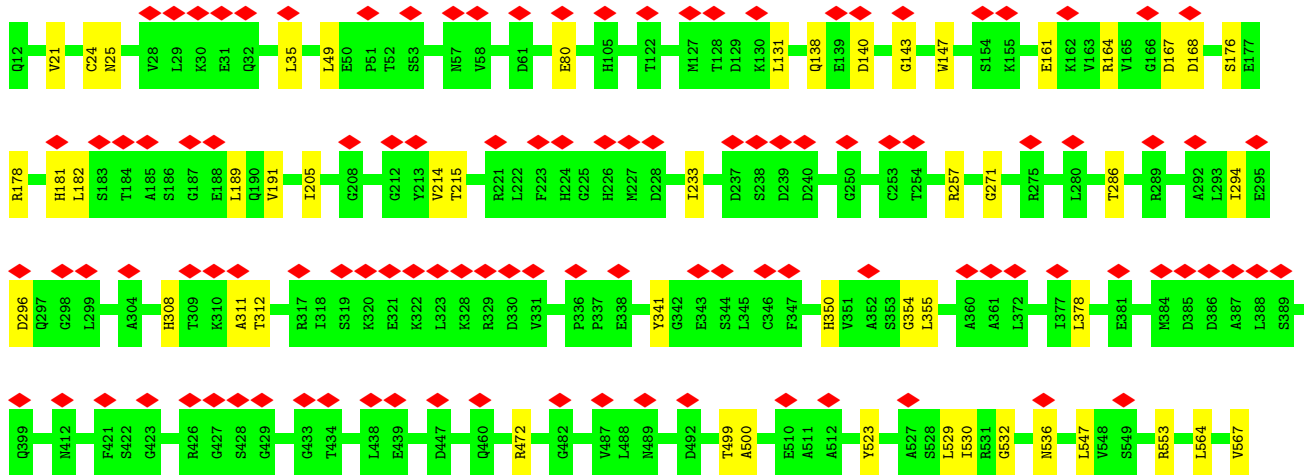
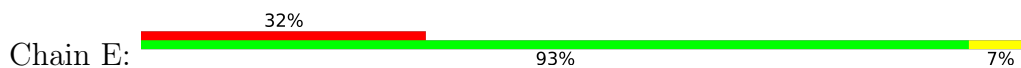


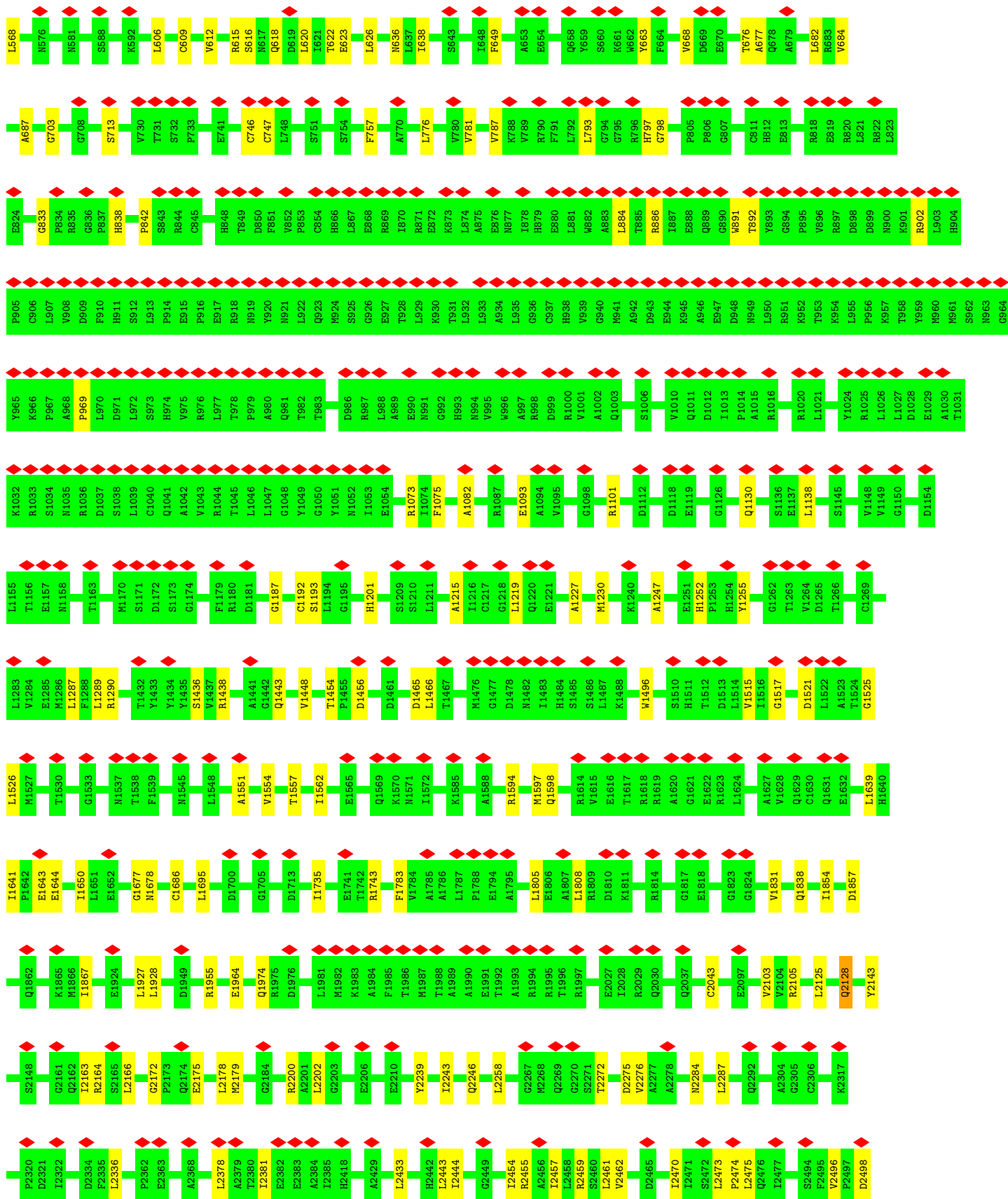


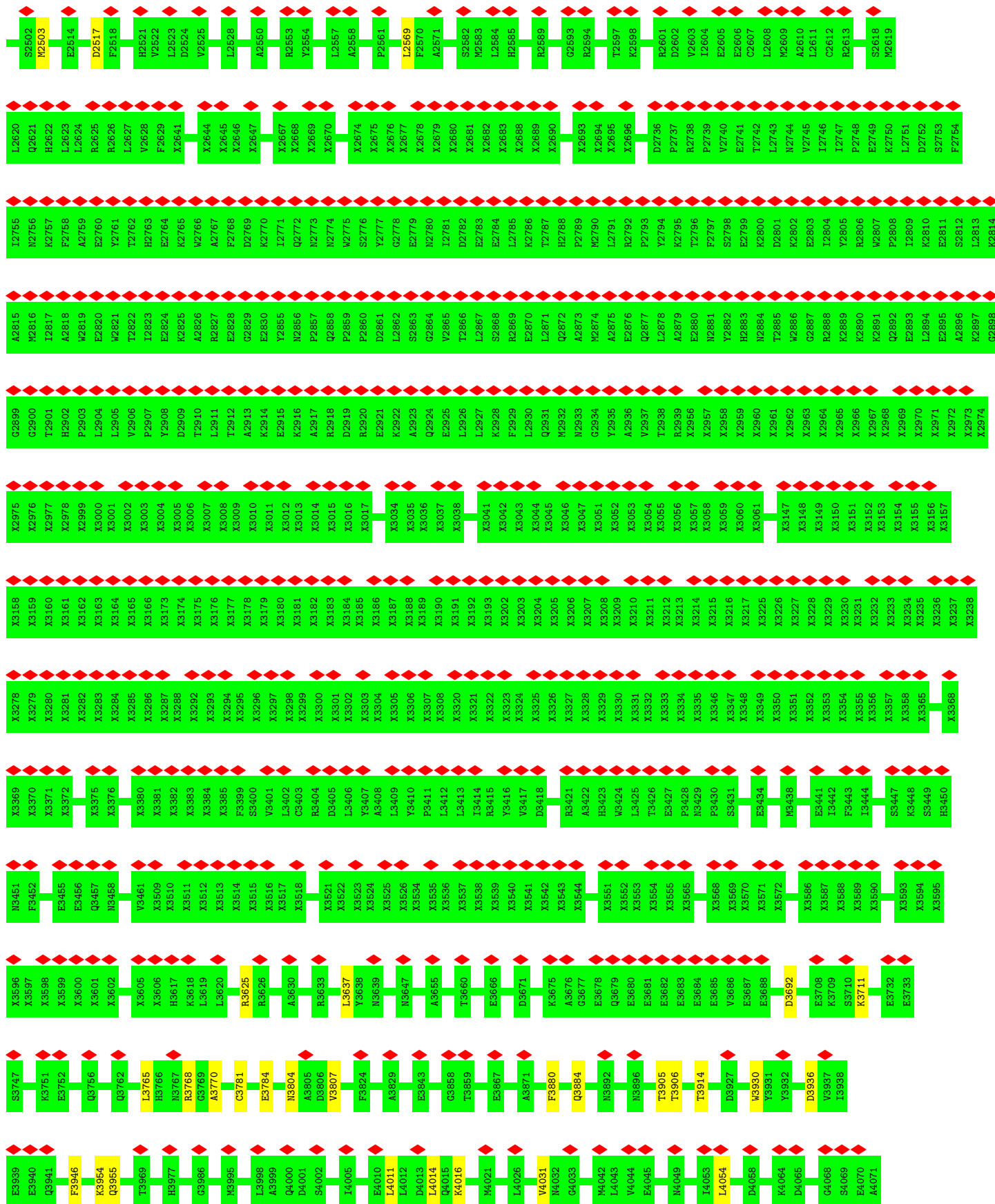


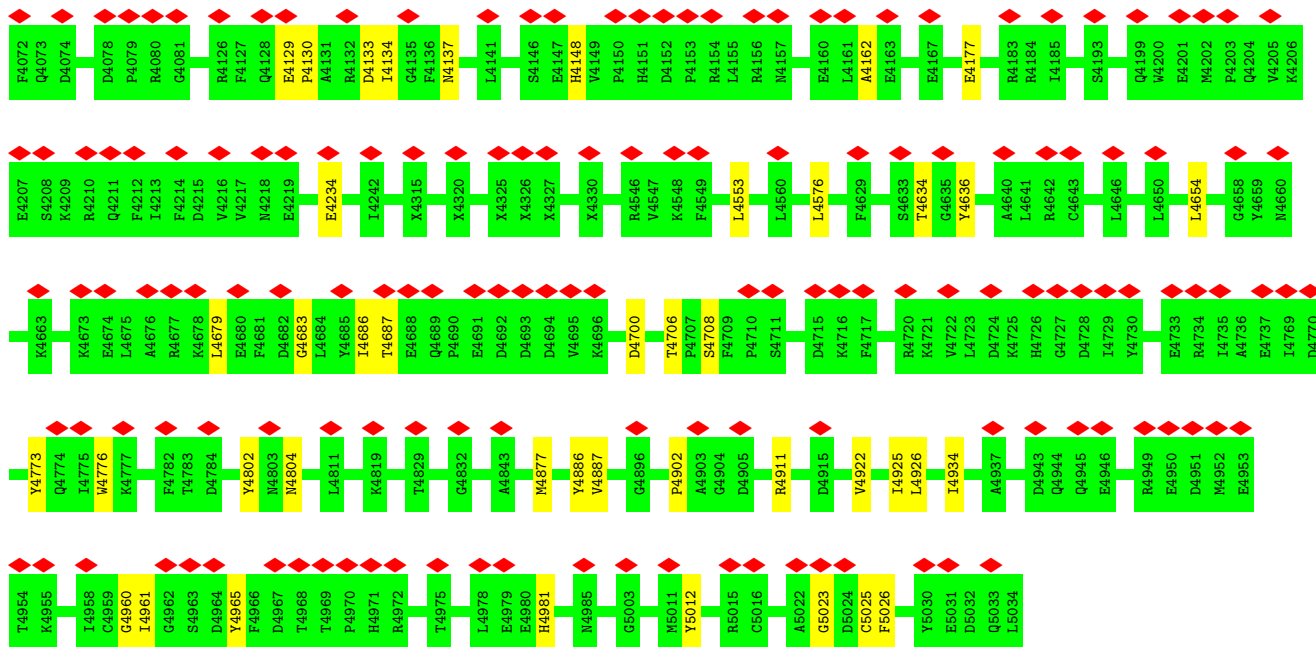


• Molecule 2: Ryanodine Receptor

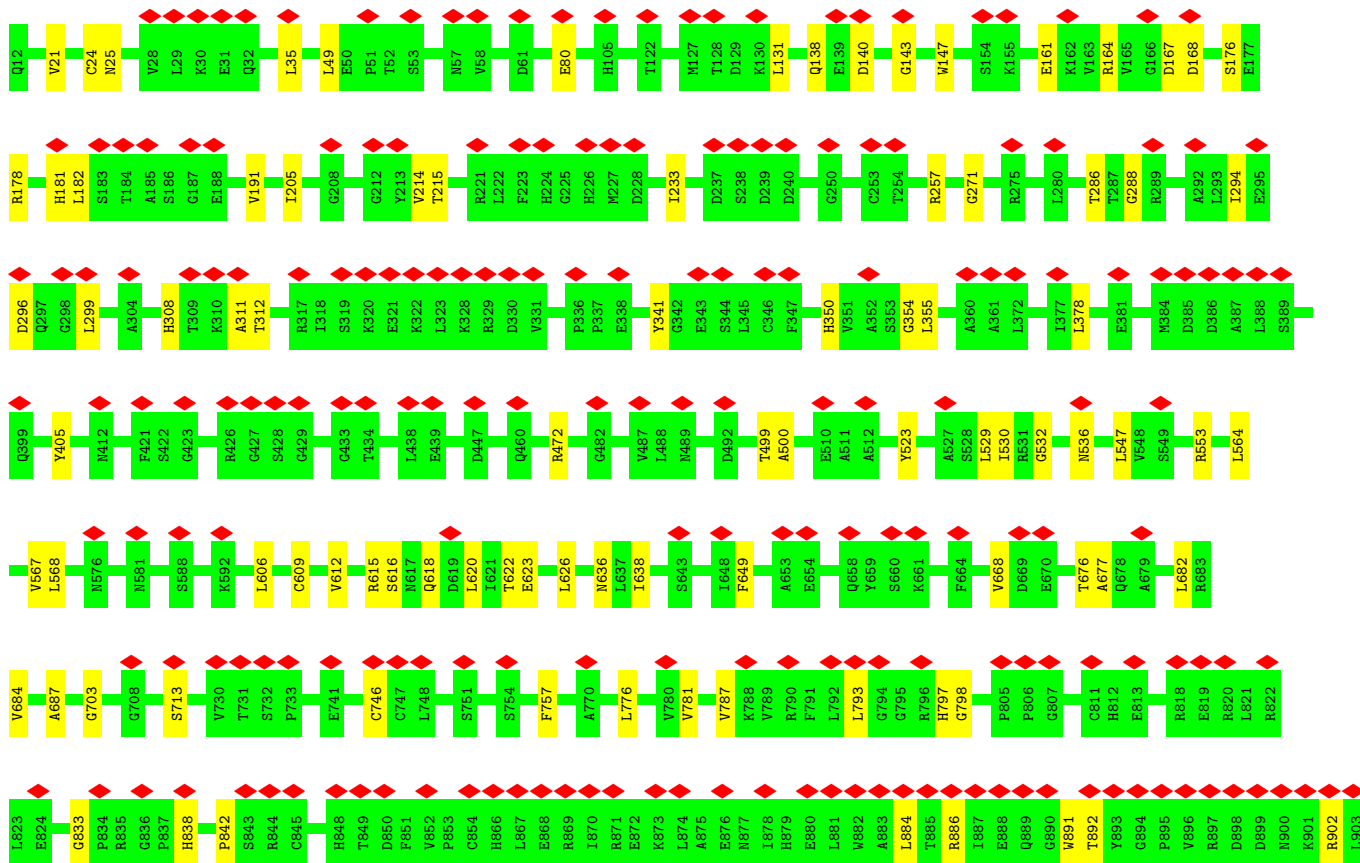
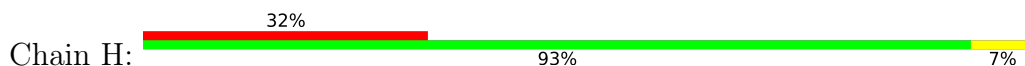






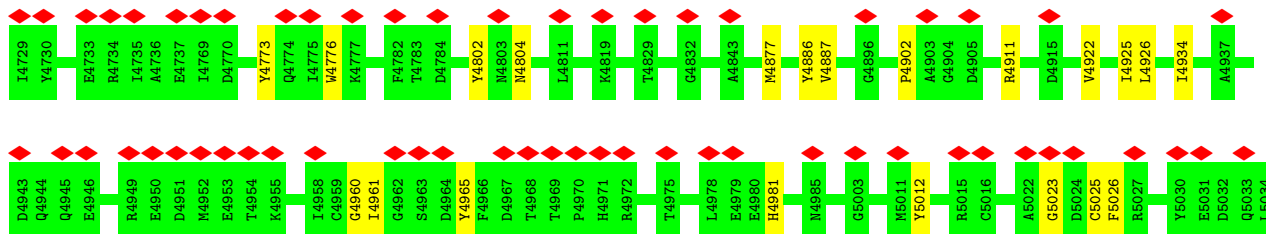


● Molecule 2: Ryanodine Receptor

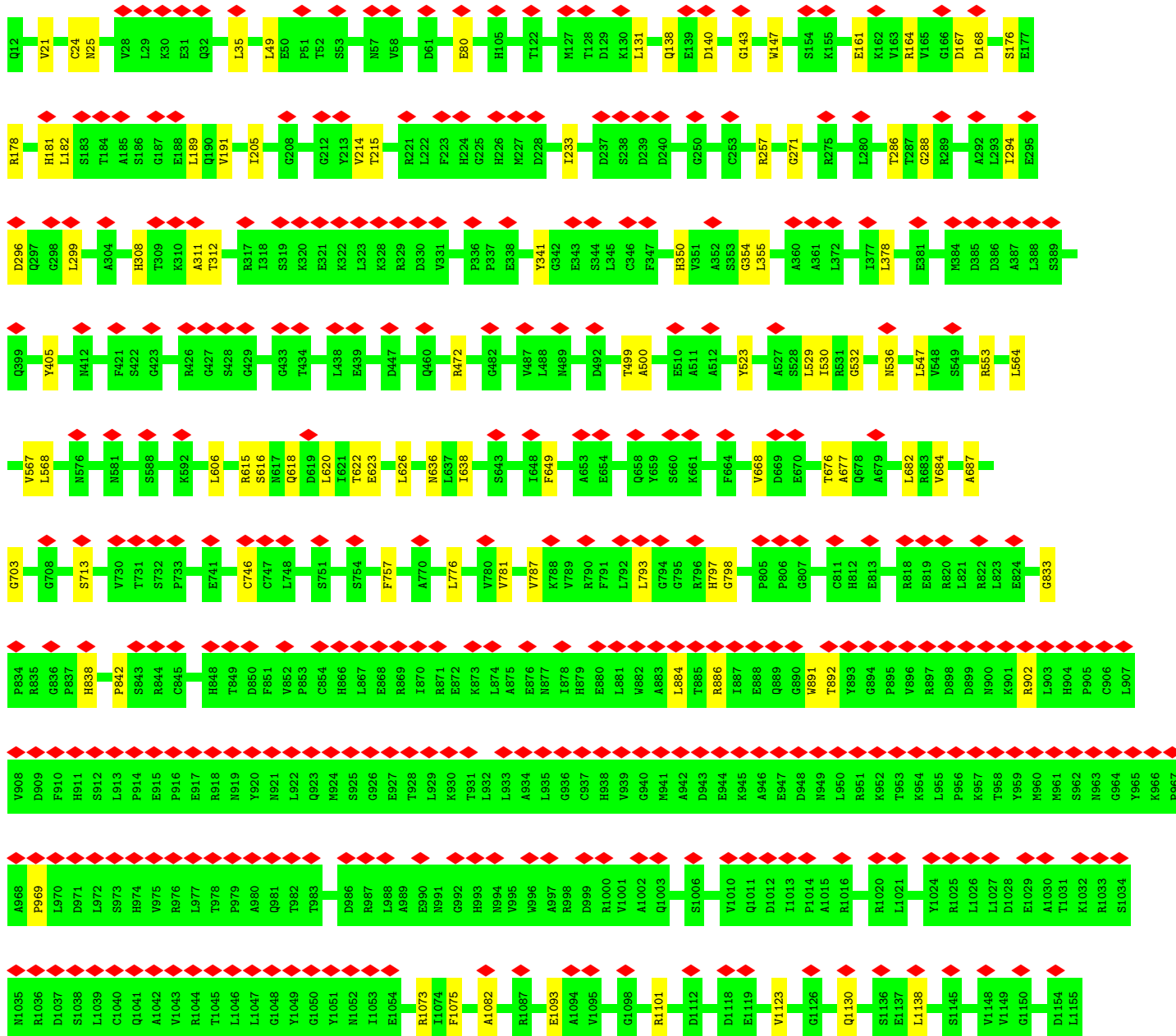
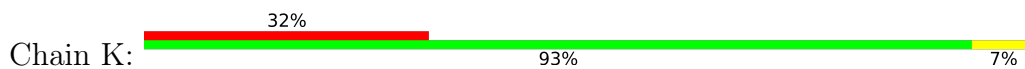


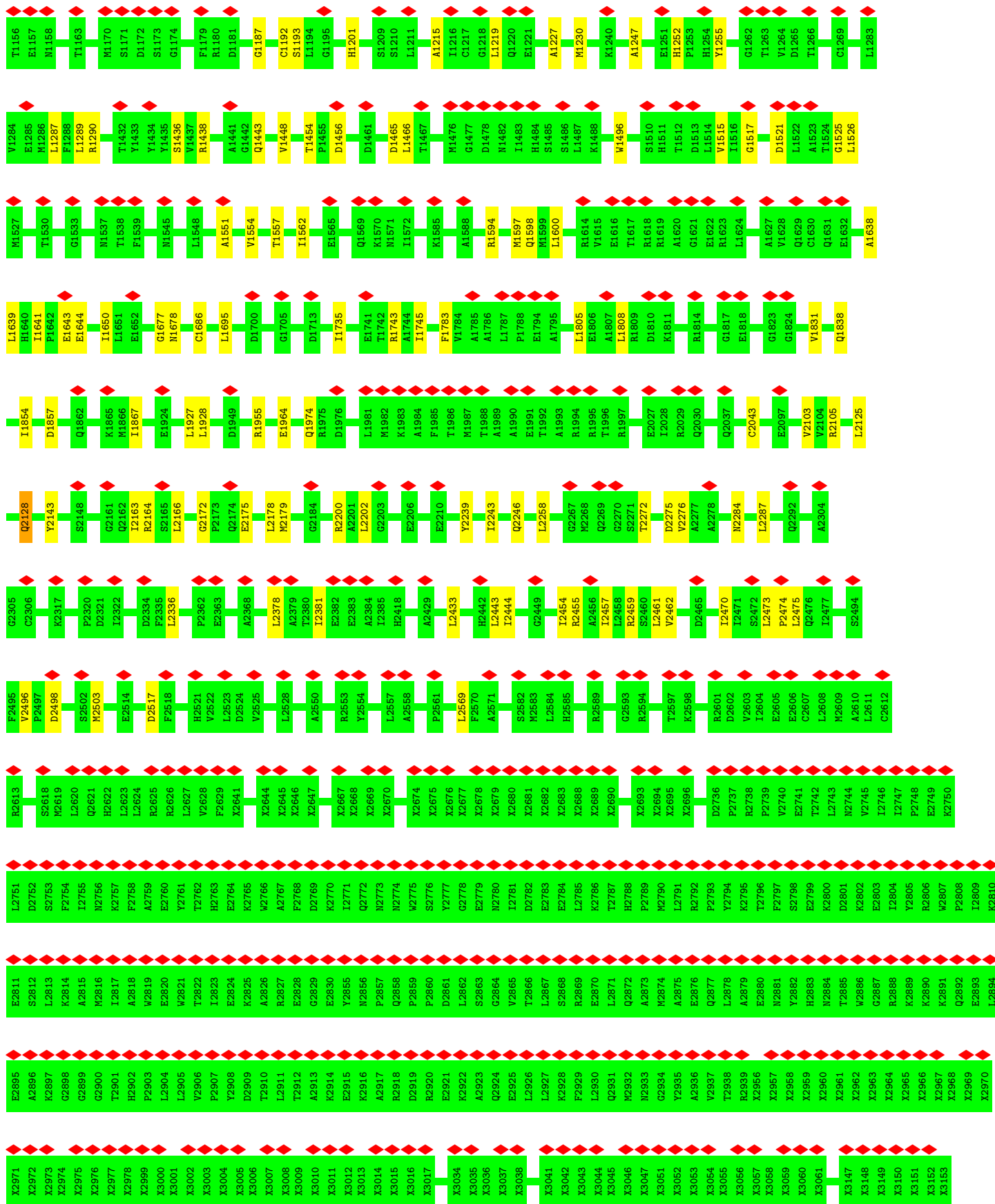
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K2750	R2612	V2495	C2306	L2125	Q1838	E1644	M1527	M1158	N1035	A968	V908
L2751	R2613	P2497	K2317	Q1828	I1854	I1650	T1530	T1163	R1036	P969	D909
S2752	S2618	D2498	P2320	Y2143	D1857	L1651	R1290	M1170	D1037	L970	F910
S2753	L2620	S2502	D2321	Q2148	Q1862	E1652	G1533	S1171	S1038	D971	H911
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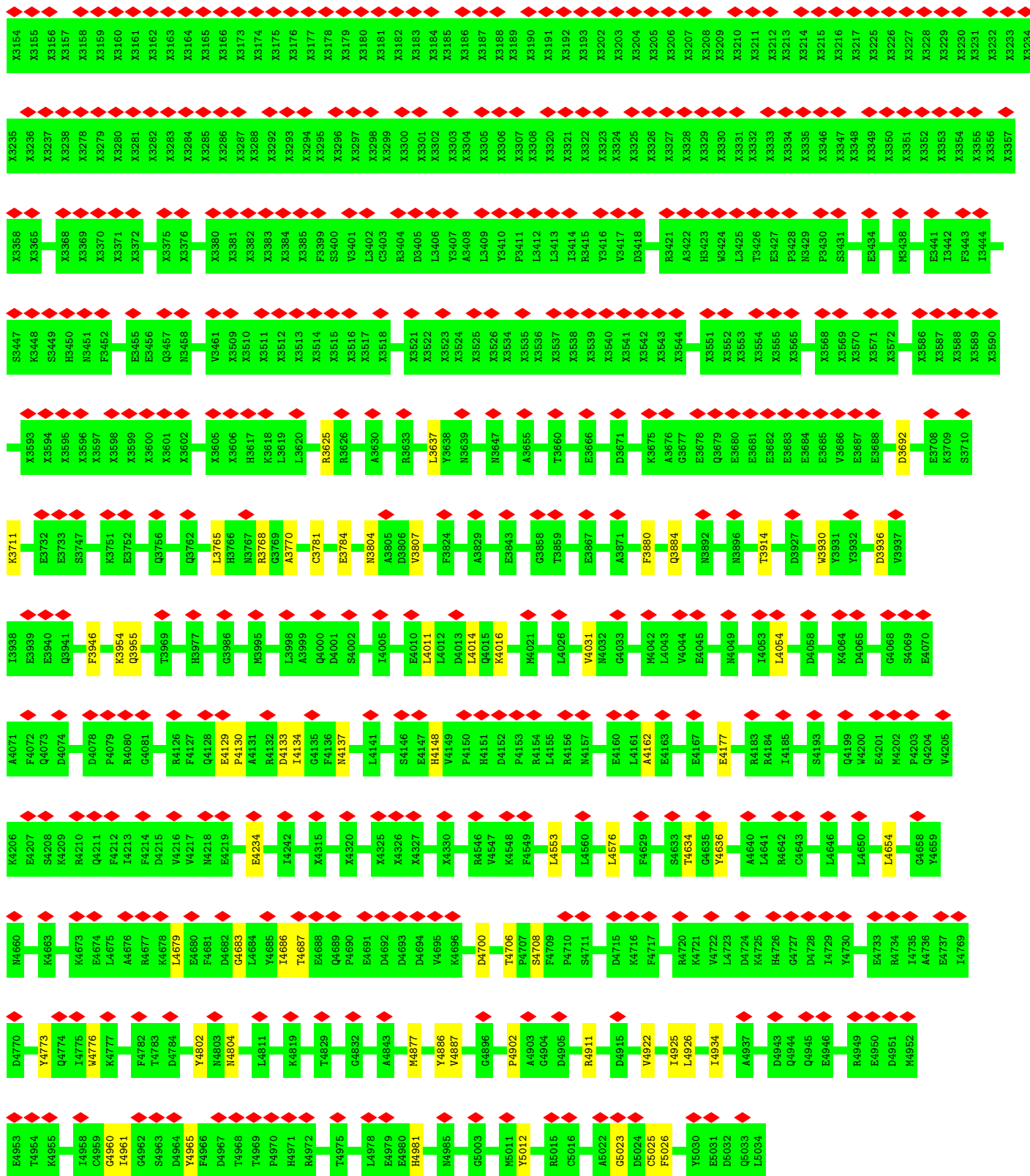
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X2966	X2967	X2968	X2969	X2970	X2971	X2972	X2973	X2974	X2975	X2976	X2977	X2978	X2979	X2980	X3000	X3001	X3002	X3003	X3004	X3005	X3006	X3007	X3008	X3009	X3010	X3011	X3012	X3013	X3014	X3015	X3016	X3017	X3034	X3035	X3036	X3037	X3038	X3041	X3042	X3043	X3044	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	L2911	T2912	A2913	K2914	E2915	K2916	A2917	R2918	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	P2808	L2809	R2810	E2811	S2812	L2813	R2814	A2815	R2816	L2817	A2818	W2819	E2820	W2821	T2822	L2823	E2824	K2825	A2826	R2827	E2828	G2829	E2830	Y2835	R2856	P2857	Q2858	R2859	P2860	D2861	L2862	S2863	G2864	V2865	L2866	L2867	S2868	R2869	E2870	L2871	Q2872	A2873	A2874	E2875	E2876	Q2877	L2878	A2879	E2880	N2881	Y2882	H2883	N2884	T2885	W2886	Q2887	R2888	



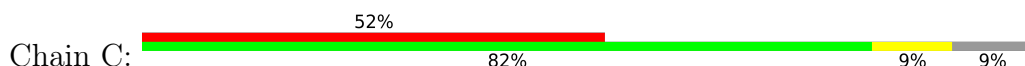
• Molecule 2: Ryanodine Receptor

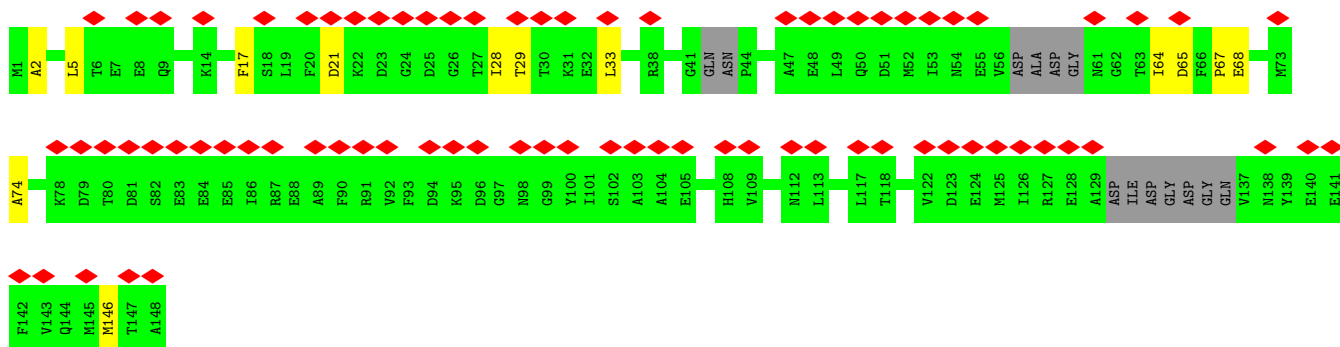




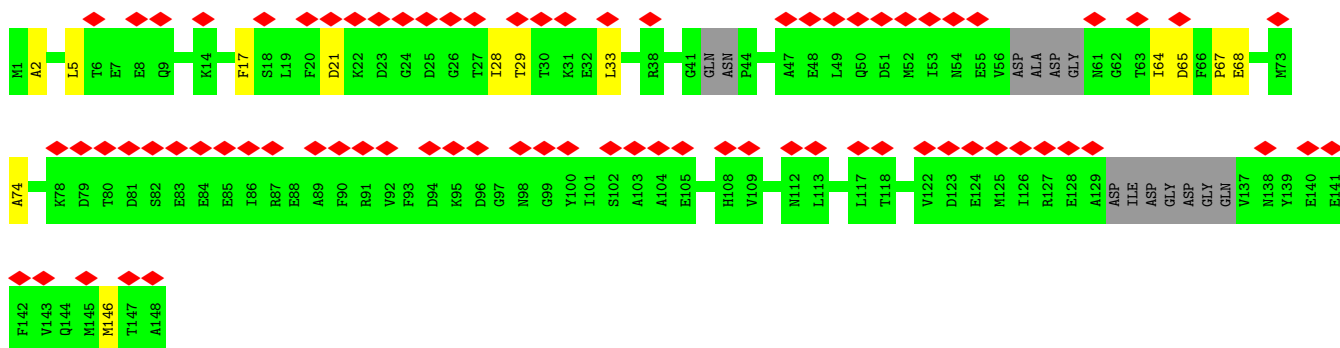
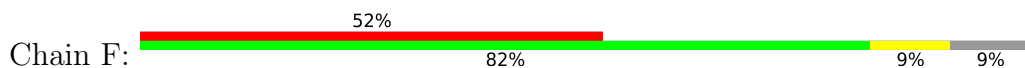


• Molecule 3: Calmodulin-1

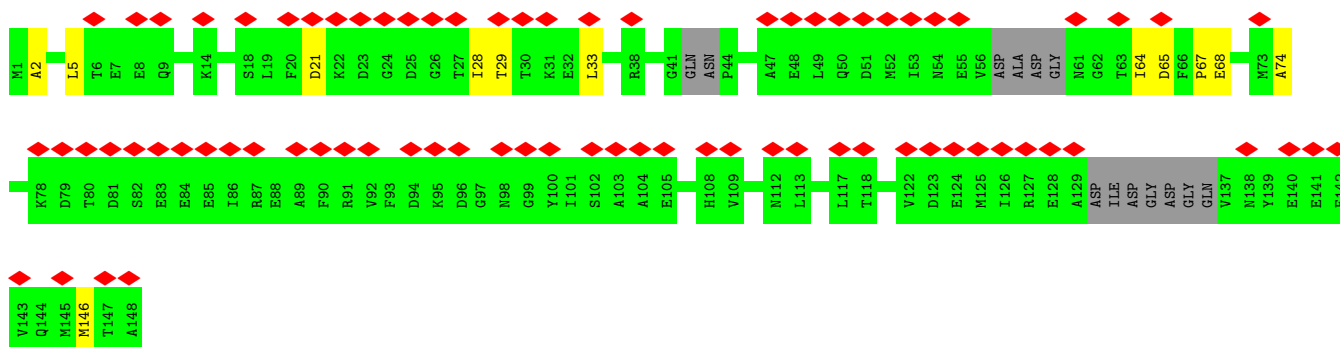
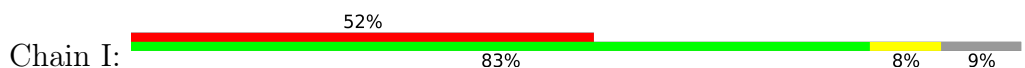




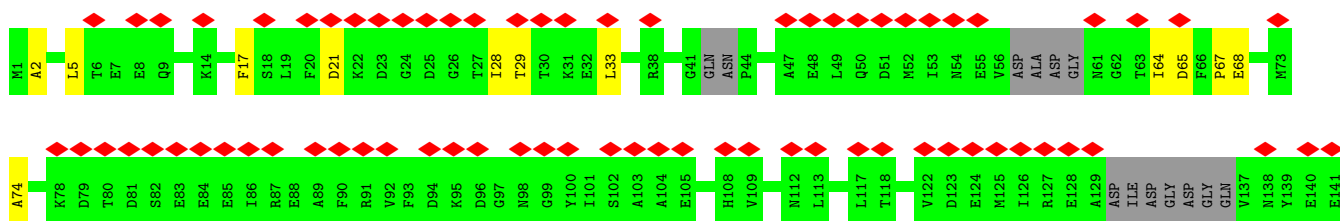
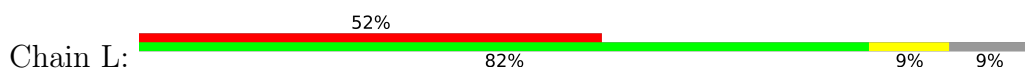
• Molecule 3: Calmodulin-1



• Molecule 3: Calmodulin-1



• Molecule 3: Calmodulin-1



F142	V143	Q144	M145	M146	T147	A148
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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

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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.

All (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
2:H:4706:THR:HG21	2:H:4773:TYR:HB2	1.74	0.69
2:K:1101:ARG:HB2	2:K:1193:SER:HB2	1.74	0.69
2:H:1101:ARG:HB2	2:H:1193:SER:HB2	1.74	0.69
2:K:4706:THR:HG21	2:K:4773:TYR:HB2	1.74	0.69
2:B:4706:THR:HG21	2:B:4773:TYR:HB2	1.74	0.69
2:B:1101:ARG:HB2	2:B:1193:SER:HB2	1.74	0.68
2:B:1082:ALA:HB1	2:B:1187:GLY:HA3	1.76	0.68
2:E:1082:ALA:HB1	2:E:1187:GLY:HA3	1.76	0.68
2:E:1101:ARG:HB2	2:E:1193:SER:HB2	1.74	0.67
2:H:1082:ALA:HB1	2:H:1187:GLY:HA3	1.76	0.67
2:K:1082:ALA:HB1	2:K:1187:GLY:HA3	1.76	0.66
2:E:3781:CYS:HB2	2:E:3784:GLU:HB3	1.78	0.66
2:B:3781:CYS:HB2	2:B:3784:GLU:HB3	1.78	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:4960:GLY:HA3	2:K:5023:GLY:H	1.61	0.65
2:K:3781:CYS:HB2	2:K:3784:GLU:HB3	1.78	0.65
2:E:4960:GLY:HA3	2:E:5023:GLY:H	1.61	0.65
2:H:4960:GLY:HA3	2:H:5023:GLY:H	1.61	0.65
2:B:4960:GLY:HA3	2:B:5023:GLY:H	1.61	0.65
2:E:4902:PRO:HB3	2:E:4911:ARG:HG2	1.79	0.64
2:H:3781:CYS:HB2	2:H:3784:GLU:HB3	1.78	0.64
2:K:4902:PRO:HB3	2:K:4911:ARG:HG2	1.79	0.64
2:B:4902:PRO:HB3	2:B:4911:ARG:HG2	1.79	0.64
2:B:833:GLY:HA3	2:B:838:HIS:HD2	1.63	0.64
2:E:833:GLY:HA3	2:E:838:HIS:HD2	1.63	0.63
2:H:4902:PRO:HB3	2:H:4911:ARG:HG2	1.79	0.63
2:K:833:GLY:HA3	2:K:838:HIS:HD2	1.63	0.63
2:H:833:GLY:HA3	2:H:838:HIS:HD2	1.63	0.62
2:K:294:ILE:HG23	2:K:296:ASP:H	1.67	0.60
2:B:294:ILE:HG23	2:B:296:ASP:H	1.67	0.60
2:E:176:SER:HB2	2:E:178:ARG:HH21	1.67	0.60
2:E:2496:VAL:HG12	2:E:2498:ASP:H	1.67	0.60
2:H:2496:VAL:HG12	2:H:2498:ASP:H	1.67	0.60
2:E:294:ILE:HG23	2:E:296:ASP:H	1.67	0.60
2:B:176:SER:HB2	2:B:178:ARG:HH21	1.67	0.60
2:H:294:ILE:HG23	2:H:296:ASP:H	1.67	0.59
2:K:2496:VAL:HG12	2:K:2498:ASP:H	1.67	0.59
2:E:793:LEU:HD12	2:E:797:HIS:HB2	1.84	0.59
2:H:793:LEU:HD12	2:H:797:HIS:HB2	1.84	0.59
2:H:176:SER:HB2	2:H:178:ARG:HH21	1.67	0.59
2:K:176:SER:HB2	2:K:178:ARG:HH21	1.67	0.59
2:B:793:LEU:HD12	2:B:797:HIS:HB2	1.84	0.58
2:B:1974:GLN:HG2	2:B:3637:LEU:HB3	1.86	0.58
2:B:2496:VAL:HG12	2:B:2498:ASP:H	1.67	0.58
2:E:1974:GLN:HG2	2:E:3637:LEU:HB3	1.86	0.58
2:E:3946:PHE:HE2	2:E:4011:LEU:HD21	1.69	0.58
2:K:523:TYR:OH	2:K:553:ARG:NH1	2.37	0.58
2:B:3946:PHE:HE2	2:B:4011:LEU:HD21	1.69	0.57
2:H:523:TYR:OH	2:H:553:ARG:NH1	2.37	0.57
2:K:793:LEU:HD12	2:K:797:HIS:HB2	1.84	0.57
2:B:523:TYR:OH	2:B:553:ARG:NH1	2.37	0.57
2:E:523:TYR:OH	2:E:553:ARG:NH1	2.37	0.57
2:B:568:LEU:HD13	2:B:606:LEU:HD21	1.87	0.57
2:H:568:LEU:HD13	2:H:606:LEU:HD21	1.87	0.57
2:K:3765:LEU:HB3	2:K:3770:ALA:HB3	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:1521:ASP:HB3	2:K:1525:GLY:HA3	1.87	0.57
2:B:1521:ASP:HB3	2:B:1525:GLY:HA3	1.87	0.57
2:E:568:LEU:HD13	2:E:606:LEU:HD21	1.87	0.57
2:H:3946:PHE:HE2	2:H:4011:LEU:HD21	1.69	0.57
2:B:24:CYS:SG	2:B:25:ASN:N	2.78	0.57
2:B:4922:VAL:HA	2:B:4926:LEU:HB3	1.87	0.57
2:H:1521:ASP:HB3	2:H:1525:GLY:HA3	1.87	0.57
2:B:4934:ILE:HG21	2:E:4925:ILE:HG23	1.87	0.56
2:H:3765:LEU:HB3	2:H:3770:ALA:HB3	1.86	0.56
2:K:568:LEU:HD13	2:K:606:LEU:HD21	1.87	0.56
2:K:3946:PHE:HE2	2:K:4011:LEU:HD21	1.69	0.56
2:E:4934:ILE:HG21	2:H:4925:ILE:HG23	1.87	0.56
2:H:1974:GLN:HG2	2:H:3637:LEU:HB3	1.86	0.56
2:K:24:CYS:SG	2:K:25:ASN:N	2.78	0.56
2:K:2470:ILE:HG21	2:K:2503:MET:HG3	1.88	0.56
2:K:4922:VAL:HA	2:K:4926:LEU:HB3	1.87	0.56
1:D:88:PRO:HB3	2:E:623:GLU:HG2	1.88	0.56
2:E:24:CYS:SG	2:E:25:ASN:N	2.78	0.56
2:K:1974:GLN:HG2	2:K:3637:LEU:HB3	1.86	0.56
2:E:2164:ARG:NH2	2:E:2202:LEU:O	2.39	0.56
2:H:4922:VAL:HA	2:H:4926:LEU:HB3	1.87	0.56
2:E:4922:VAL:HA	2:E:4926:LEU:HB3	1.87	0.56
2:K:3692:ASP:OD2	2:K:3768:ARG:NH2	2.39	0.56
2:B:2164:ARG:NH2	2:B:2202:LEU:O	2.39	0.56
2:E:233:ILE:O	2:E:257:ARG:NH1	2.39	0.56
1:A:88:PRO:HB3	2:B:623:GLU:HG2	1.88	0.56
1:G:88:PRO:HB3	2:H:623:GLU:HG2	1.88	0.56
2:H:3692:ASP:OD2	2:H:3768:ARG:NH2	2.39	0.56
2:K:2164:ARG:NH2	2:K:2202:LEU:O	2.39	0.56
2:B:2470:ILE:HG21	2:B:2503:MET:HG3	1.88	0.56
2:E:2470:ILE:HG21	2:E:2503:MET:HG3	1.88	0.56
2:H:233:ILE:O	2:H:257:ARG:NH1	2.39	0.56
2:H:4576:LEU:HA	2:K:4877:MET:HG2	1.88	0.56
2:K:233:ILE:O	2:K:257:ARG:NH1	2.39	0.56
2:H:2470:ILE:HG21	2:H:2503:MET:HG3	1.88	0.56
2:B:3765:LEU:HB3	2:B:3770:ALA:HB3	1.86	0.56
2:B:4877:MET:HG2	2:K:4576:LEU:HA	1.88	0.56
2:E:3692:ASP:OD2	2:E:3768:ARG:NH2	2.39	0.56
2:H:4934:ILE:HG21	2:K:4925:ILE:HG23	1.87	0.56
2:E:1215:ALA:HA	2:E:1219:LEU:HB2	1.88	0.55
2:E:3765:LEU:HB3	2:E:3770:ALA:HB3	1.86	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:24:CYS:SG	2:H:25:ASN:N	2.78	0.55
2:B:233:ILE:O	2:B:257:ARG:NH1	2.39	0.55
2:B:618:GLN:OE1	2:B:1678:ASN:ND2	2.39	0.55
2:E:1521:ASP:HB3	2:E:1525:GLY:HA3	1.87	0.55
2:K:618:GLN:OE1	2:K:1678:ASN:ND2	2.39	0.55
2:K:1215:ALA:HA	2:K:1219:LEU:HB2	1.88	0.55
2:B:1215:ALA:HA	2:B:1219:LEU:HB2	1.88	0.55
2:H:1215:ALA:HA	2:H:1219:LEU:HB2	1.88	0.55
2:K:4706:THR:HG22	2:K:4708:SER:H	1.71	0.55
2:B:3692:ASP:OD2	2:B:3768:ARG:NH2	2.39	0.55
2:B:4925:ILE:HG23	2:K:4934:ILE:HG21	1.87	0.55
2:H:2164:ARG:NH2	2:H:2202:LEU:O	2.39	0.55
2:B:4961:ILE:HD11	2:B:4965:TYR:HB2	1.89	0.55
2:E:2443:LEU:HD12	2:E:2444:ILE:HG13	1.89	0.55
2:K:4961:ILE:HD11	2:K:4965:TYR:HB2	1.89	0.55
2:B:842:PRO:HD3	2:B:1073:ARG:HG2	1.89	0.55
2:E:4961:ILE:HD11	2:E:4965:TYR:HB2	1.89	0.54
2:E:5025:CYS:SG	2:E:5026:PHE:N	2.80	0.54
2:H:618:GLN:OE1	2:H:1678:ASN:ND2	2.39	0.54
1:J:88:PRO:HB3	2:K:623:GLU:HG2	1.88	0.54
2:K:842:PRO:HD3	2:K:1073:ARG:HG2	1.89	0.54
2:B:1928:LEU:O	2:B:2105:ARG:NH2	2.41	0.54
2:B:4576:LEU:HA	2:E:4877:MET:HG2	1.88	0.54
2:E:618:GLN:OE1	2:E:1678:ASN:ND2	2.39	0.54
2:B:4706:THR:HG22	2:B:4708:SER:H	1.71	0.54
2:E:842:PRO:HD3	2:E:1073:ARG:HG2	1.89	0.54
2:E:4706:THR:HG22	2:E:4708:SER:H	1.71	0.54
2:H:1928:LEU:O	2:H:2105:ARG:NH2	2.41	0.54
2:H:4961:ILE:HD11	2:H:4965:TYR:HB2	1.89	0.54
2:K:1928:LEU:O	2:K:2105:ARG:NH2	2.41	0.54
2:E:4576:LEU:HA	2:H:4877:MET:HG2	1.88	0.54
2:H:5025:CYS:SG	2:H:5026:PHE:N	2.80	0.54
2:B:2443:LEU:HD12	2:B:2444:ILE:HG13	1.89	0.54
2:B:5025:CYS:SG	2:B:5026:PHE:N	2.80	0.54
2:H:4706:THR:HG22	2:H:4708:SER:H	1.71	0.54
2:K:5025:CYS:SG	2:K:5026:PHE:N	2.80	0.54
2:E:793:LEU:H	2:E:798:GLY:HA3	1.73	0.53
2:B:3711:LYS:NZ	2:B:3784:GLU:OE2	2.39	0.53
2:E:1928:LEU:O	2:E:2105:ARG:NH2	2.41	0.53
2:H:622:THR:HG23	2:H:626:LEU:HD22	1.90	0.53
2:H:842:PRO:HD3	2:H:1073:ARG:HG2	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:74:LEU:HD22	1:J:101:VAL:HG21	1.91	0.53
2:B:793:LEU:H	2:B:798:GLY:HA3	1.73	0.53
1:G:74:LEU:HD22	1:G:101:VAL:HG21	1.91	0.53
2:K:2443:LEU:HD12	2:K:2444:ILE:HG13	1.89	0.53
2:K:472:ARG:NH1	2:K:532:GLY:O	2.42	0.53
2:K:547:LEU:HD22	2:K:564:LEU:HD13	1.91	0.53
2:E:622:THR:HG23	2:E:626:LEU:HD22	1.90	0.53
2:H:638:ILE:HD13	2:H:703:GLY:HA2	1.91	0.53
3:L:29:THR:O	3:L:33:LEU:N	2.40	0.53
2:B:472:ARG:NH1	2:B:532:GLY:O	2.42	0.52
2:B:547:LEU:HD22	2:B:564:LEU:HD13	1.91	0.52
2:B:2336:LEU:HB2	2:B:2433:LEU:HD11	1.91	0.52
2:H:1466:LEU:HD23	2:H:1496:TRP:HE3	1.74	0.52
2:K:1466:LEU:HD23	2:K:1496:TRP:HE3	1.74	0.52
1:A:74:LEU:HD22	1:A:101:VAL:HG21	1.91	0.52
2:E:638:ILE:HD13	2:E:703:GLY:HA2	1.91	0.52
2:H:472:ARG:NH1	2:H:532:GLY:O	2.42	0.52
2:K:1955:ARG:NH1	2:K:2043:CYS:SG	2.82	0.52
2:B:1436:SER:HA	2:B:1517:GLY:HA2	1.92	0.52
1:D:35:LYS:HD3	1:D:38:SER:HB2	1.91	0.52
2:H:793:LEU:H	2:H:798:GLY:HA3	1.73	0.52
2:K:793:LEU:H	2:K:798:GLY:HA3	1.73	0.52
2:K:1594:ARG:NH1	2:K:1643:GLU:OE2	2.42	0.52
1:A:35:LYS:HD3	1:A:38:SER:HB2	1.91	0.52
2:B:622:THR:HG23	2:B:626:LEU:HD22	1.90	0.52
2:B:1594:ARG:NH1	2:B:1643:GLU:OE2	2.42	0.52
1:D:74:LEU:HD22	1:D:101:VAL:HG21	1.91	0.52
2:H:2336:LEU:HB2	2:H:2433:LEU:HD11	1.91	0.52
2:H:4133:ASP:O	2:H:4137:ASN:ND2	2.41	0.52
2:B:4054:LEU:HD13	2:B:4162:ALA:HB2	1.92	0.52
2:E:1955:ARG:NH1	2:E:2043:CYS:SG	2.82	0.52
2:H:1594:ARG:NH1	2:H:1643:GLU:OE2	2.42	0.52
2:H:1955:ARG:NH1	2:H:2043:CYS:SG	2.82	0.52
2:B:1955:ARG:NH1	2:B:2043:CYS:SG	2.82	0.52
2:E:1594:ARG:NH1	2:E:1643:GLU:OE2	2.42	0.52
2:H:2443:LEU:HD12	2:H:2444:ILE:HG13	1.89	0.52
2:K:2166:LEU:HG	2:K:2178:LEU:HD22	1.92	0.52
2:B:168:ASP:OD1	2:B:168:ASP:N	2.43	0.52
2:E:4054:LEU:HD13	2:E:4162:ALA:HB2	1.92	0.52
2:H:4054:LEU:HD13	2:H:4162:ALA:HB2	1.92	0.52
2:K:1436:SER:HA	2:K:1517:GLY:HA2	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:622:THR:HG23	2:K:626:LEU:HD22	1.90	0.52
2:E:472:ARG:NH1	2:E:532:GLY:O	2.42	0.52
2:E:547:LEU:HD22	2:E:564:LEU:HD13	1.91	0.52
2:H:547:LEU:HD22	2:H:564:LEU:HD13	1.91	0.52
2:B:638:ILE:HD13	2:B:703:GLY:HA2	1.91	0.52
2:B:4133:ASP:O	2:B:4137:ASN:ND2	2.41	0.52
2:E:2336:LEU:HB2	2:E:2433:LEU:HD11	1.91	0.52
1:J:35:LYS:HD3	1:J:38:SER:HB2	1.91	0.51
2:B:1466:LEU:HD23	2:B:1496:TRP:HE3	1.74	0.51
2:E:1466:LEU:HD23	2:E:1496:TRP:HE3	1.74	0.51
2:H:1436:SER:HA	2:H:1517:GLY:HA2	1.92	0.51
2:K:4133:ASP:O	2:K:4137:ASN:ND2	2.41	0.51
2:H:2166:LEU:HG	2:H:2178:LEU:HD22	1.92	0.51
2:K:2336:LEU:HB2	2:K:2433:LEU:HD11	1.91	0.51
1:G:35:LYS:HD3	1:G:38:SER:HB2	1.91	0.51
3:I:29:THR:O	3:I:33:LEU:N	2.40	0.51
2:K:168:ASP:OD1	2:K:168:ASP:N	2.43	0.51
2:K:3711:LYS:NZ	2:K:3784:GLU:OE2	2.39	0.51
2:E:4177:GLU:CB	2:E:4981:HIS:HE1	2.23	0.51
2:K:638:ILE:HD13	2:K:703:GLY:HA2	1.91	0.51
3:F:29:THR:O	3:F:33:LEU:N	2.40	0.51
2:B:2166:LEU:HG	2:B:2178:LEU:HD22	1.92	0.51
2:H:4177:GLU:CB	2:H:4981:HIS:HE1	2.24	0.51
2:E:1438:ARG:HG2	2:E:1515:VAL:HG12	1.93	0.51
2:K:1289:LEU:HD12	2:K:1562:ILE:HD11	1.93	0.51
2:K:4054:LEU:HD13	2:K:4162:ALA:HB2	1.92	0.51
2:E:4133:ASP:O	2:E:4137:ASN:ND2	2.41	0.51
2:K:1438:ARG:HG2	2:K:1515:VAL:HG12	1.93	0.51
2:B:1289:LEU:HD12	2:B:1562:ILE:HD11	1.93	0.50
2:H:168:ASP:OD1	2:H:168:ASP:N	2.43	0.50
2:B:1597:MET:SD	2:B:1597:MET:N	2.85	0.50
2:E:1436:SER:HA	2:E:1517:GLY:HA2	1.92	0.50
2:E:3711:LYS:NZ	2:E:3784:GLU:OE2	2.39	0.50
3:C:29:THR:O	3:C:33:LEU:N	2.40	0.50
2:E:1831:VAL:HB	2:E:1838:GLN:HG3	1.94	0.50
2:H:1438:ARG:HG2	2:H:1515:VAL:HG12	1.93	0.50
2:K:1597:MET:SD	2:K:1597:MET:N	2.85	0.50
2:B:308:HIS:CD2	2:B:311:ALA:H	2.30	0.50
2:B:2473:LEU:HD12	2:B:2474:PRO:HD2	1.94	0.50
2:E:308:HIS:CD2	2:E:311:ALA:H	2.30	0.50
2:H:1831:VAL:HB	2:H:1838:GLN:HG3	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:308:HIS:CD2	2:K:311:ALA:H	2.30	0.50
2:B:1438:ARG:HG2	2:B:1515:VAL:HG12	1.93	0.50
2:E:2166:LEU:HG	2:E:2178:LEU:HD22	1.92	0.50
2:H:1597:MET:SD	2:H:1597:MET:N	2.85	0.50
2:K:3884:GLN:OE1	2:K:3955:GLN:NE2	2.45	0.50
2:E:161:GLU:OE2	2:E:164:ARG:NH2	2.45	0.50
2:E:2473:LEU:HD12	2:E:2474:PRO:HD2	1.94	0.50
2:H:308:HIS:CD2	2:H:311:ALA:H	2.30	0.50
2:H:2200:ARG:NH2	2:H:2246:GLN:OE1	2.45	0.50
2:K:1831:VAL:HB	2:K:1838:GLN:HG3	1.94	0.50
2:K:4679:LEU:HD12	2:K:4683:GLY:HA2	1.94	0.50
2:B:3884:GLN:OE1	2:B:3955:GLN:NE2	2.45	0.50
2:E:1597:MET:SD	2:E:1597:MET:N	2.85	0.50
2:H:1289:LEU:HD12	2:H:1562:ILE:HD11	1.93	0.50
2:H:4679:LEU:HD12	2:H:4683:GLY:HA2	1.94	0.50
2:B:1743:ARG:NH1	2:B:1964:GLU:OE2	2.44	0.50
2:K:161:GLU:OE2	2:K:164:ARG:NH2	2.45	0.50
2:H:4686:ILE:HG22	2:H:4687:THR:HG23	1.94	0.49
2:E:1289:LEU:HD12	2:E:1562:ILE:HD11	1.93	0.49
2:H:3884:GLN:OE1	2:H:3955:GLN:NE2	2.45	0.49
2:K:2200:ARG:NH2	2:K:2246:GLN:OE1	2.45	0.49
2:K:4686:ILE:HG22	2:K:4687:THR:HG23	1.94	0.49
2:E:3884:GLN:OE1	2:E:3955:GLN:NE2	2.45	0.49
2:B:1735:ILE:HG22	2:B:2143:TYR:HB3	1.95	0.49
2:B:1831:VAL:HB	2:B:1838:GLN:HG3	1.94	0.49
2:K:1695:LEU:HD11	2:K:1808:LEU:HD11	1.95	0.49
2:E:2200:ARG:NH2	2:E:2246:GLN:OE1	2.45	0.49
1:G:90:VAL:HG23	1:G:91:ILE:HG12	1.95	0.49
2:H:1695:LEU:HD11	2:H:1808:LEU:HD11	1.95	0.49
2:H:2473:LEU:HD12	2:H:2474:PRO:HD2	1.94	0.49
2:B:161:GLU:OE2	2:B:164:ARG:NH2	2.45	0.49
2:B:1290:ARG:HG3	2:B:1551:ALA:HB2	1.95	0.49
2:E:1695:LEU:HD11	2:E:1808:LEU:HD11	1.95	0.49
2:H:1743:ARG:NH1	2:H:1964:GLU:OE2	2.44	0.49
2:B:4679:LEU:HD12	2:B:4683:GLY:HA2	1.94	0.49
2:E:4679:LEU:HD12	2:E:4683:GLY:HA2	1.94	0.49
2:H:649:PHE:HB3	2:H:776:LEU:HD13	1.95	0.49
1:A:90:VAL:HG23	1:A:91:ILE:HG12	1.95	0.48
2:B:649:PHE:HB3	2:B:776:LEU:HD13	1.95	0.48
2:K:2473:LEU:HD12	2:K:2474:PRO:HD2	1.94	0.48
2:B:1075:PHE:HB2	2:B:1192:CYS:HB3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:2517:ASP:HA	2:E:2569:LEU:HD21	1.95	0.48
2:K:649:PHE:HB3	2:K:776:LEU:HD13	1.95	0.48
2:K:1290:ARG:HG3	2:K:1551:ALA:HB2	1.95	0.48
2:K:1735:ILE:HG22	2:K:2143:TYR:HB3	1.95	0.48
2:K:2163:ILE:HD11	2:K:2179:MET:HG3	1.95	0.48
2:B:2200:ARG:NH2	2:B:2246:GLN:OE1	2.45	0.48
2:E:350:HIS:HB3	2:E:354:GLY:H	1.79	0.48
2:E:1075:PHE:HB2	2:E:1192:CYS:HB3	1.95	0.48
2:E:1735:ILE:HG22	2:E:2143:TYR:HB3	1.95	0.48
2:H:2517:ASP:HA	2:H:2569:LEU:HD21	1.95	0.48
2:B:1093:GLU:HB3	2:B:1201:HIS:HB3	1.95	0.48
2:B:1695:LEU:HD11	2:B:1808:LEU:HD11	1.95	0.48
2:B:2103:VAL:HG11	2:B:2125:LEU:HD13	1.95	0.48
2:B:4686:ILE:HG22	2:B:4687:THR:HG23	1.94	0.48
2:E:4686:ILE:HG22	2:E:4687:THR:HG23	1.94	0.48
2:H:3711:LYS:NZ	2:H:3784:GLU:OE2	2.39	0.48
2:B:4802:TYR:CE2	2:B:4804:ASN:HB2	2.49	0.48
2:E:649:PHE:HB3	2:E:776:LEU:HD13	1.95	0.48
2:H:884:LEU:HD11	2:H:969:PRO:HA	1.95	0.48
2:B:2163:ILE:HD11	2:B:2179:MET:HG3	1.95	0.48
1:D:90:VAL:HG23	1:D:91:ILE:HG12	1.95	0.48
2:H:1735:ILE:HG22	2:H:2143:TYR:HB3	1.95	0.48
2:K:4802:TYR:CE2	2:K:4804:ASN:HB2	2.49	0.48
2:B:4234:GLU:OE2	2:B:5012:TYR:OH	2.30	0.48
2:E:2163:ILE:HD11	2:E:2179:MET:HG3	1.95	0.48
2:H:1093:GLU:HB3	2:H:1201:HIS:HB3	1.95	0.48
2:H:2103:VAL:HG11	2:H:2125:LEU:HD13	1.95	0.48
2:B:530:ILE:HG21	2:B:567:VAL:HG12	1.96	0.48
1:D:4:ILE:HD13	1:D:65:GLN:HG2	1.96	0.48
2:K:2517:ASP:HA	2:K:2569:LEU:HD21	1.95	0.48
1:D:78:PRO:HG3	1:D:96:THR:HA	1.96	0.48
2:H:350:HIS:HB3	2:H:354:GLY:H	1.79	0.48
2:K:350:HIS:HB3	2:K:354:GLY:H	1.79	0.48
2:K:530:ILE:HG21	2:K:567:VAL:HG12	1.96	0.48
1:A:78:PRO:HG3	1:A:96:THR:HA	1.96	0.47
2:E:1454:THR:HG22	2:E:1456:ASP:H	1.79	0.47
2:H:161:GLU:OE2	2:H:164:ARG:NH2	2.45	0.47
2:H:1290:ARG:HG3	2:H:1551:ALA:HB2	1.95	0.47
2:H:3834:CYS:HG	2:H:3917:TYR:HH	1.60	0.47
1:J:90:VAL:HG23	1:J:91:ILE:HG12	1.95	0.47
2:B:1643:GLU:HG3	2:B:1644:GLU:HG3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:1454:THR:HG22	2:K:1456:ASP:H	1.79	0.47
2:K:3880:PHE:HE1	2:K:3914:THR:HG23	1.79	0.47
2:B:2517:ASP:HA	2:B:2569:LEU:HD21	1.95	0.47
2:E:168:ASP:N	2:E:168:ASP:OD1	2.43	0.47
2:E:2103:VAL:HG11	2:E:2125:LEU:HD13	1.95	0.47
2:K:2103:VAL:HG11	2:K:2125:LEU:HD13	1.95	0.47
2:B:350:HIS:HB3	2:B:354:GLY:H	1.79	0.47
2:B:1454:THR:HG22	2:B:1456:ASP:H	1.79	0.47
2:B:4886:TYR:HD2	2:B:4887:VAL:HG13	1.80	0.47
2:E:3880:PHE:HE1	2:E:3914:THR:HG23	1.79	0.47
2:H:530:ILE:HG21	2:H:567:VAL:HG12	1.96	0.47
1:J:78:PRO:HG3	1:J:96:THR:HA	1.96	0.47
2:B:884:LEU:HD11	2:B:969:PRO:HA	1.95	0.47
2:E:1290:ARG:HG3	2:E:1551:ALA:HB2	1.95	0.47
2:H:676:THR:OG1	2:H:677:ALA:N	2.46	0.47
2:H:3880:PHE:HE1	2:H:3914:THR:HG23	1.79	0.47
2:K:884:LEU:HD11	2:K:969:PRO:HA	1.95	0.47
1:A:4:ILE:HD13	1:A:65:GLN:HG2	1.96	0.47
2:B:3880:PHE:HE1	2:B:3914:THR:HG23	1.79	0.47
2:K:676:THR:OG1	2:K:677:ALA:N	2.46	0.47
2:E:530:ILE:HG21	2:E:567:VAL:HG12	1.96	0.47
2:E:676:THR:OG1	2:E:677:ALA:N	2.46	0.47
2:E:884:LEU:HD11	2:E:969:PRO:HA	1.95	0.47
2:E:1093:GLU:HB3	2:E:1201:HIS:HB3	1.95	0.47
1:G:78:PRO:HG3	1:G:96:THR:HA	1.96	0.47
2:H:2163:ILE:HD11	2:H:2179:MET:HG3	1.95	0.47
2:H:4802:TYR:CE2	2:H:4804:ASN:HB2	2.49	0.47
2:K:1075:PHE:HB2	2:K:1192:CYS:HB3	1.95	0.47
2:K:1093:GLU:HB3	2:K:1201:HIS:HB3	1.95	0.47
2:K:1643:GLU:HG3	2:K:1644:GLU:HG3	1.96	0.47
2:K:4234:GLU:OE2	2:K:5012:TYR:OH	2.30	0.47
2:K:4886:TYR:HD2	2:K:4887:VAL:HG13	1.80	0.47
2:B:2239:TYR:OH	3:C:68:GLU:OE2	2.33	0.47
2:E:746:CYS:HA	2:E:757:PHE:HA	1.97	0.47
2:E:2454:ILE:HA	2:E:2457:ILE:HD12	1.96	0.47
2:H:616:SER:O	2:H:620:LEU:HD13	2.15	0.47
2:H:1075:PHE:HB2	2:H:1192:CYS:HB3	1.95	0.47
2:H:4886:TYR:HD2	2:H:4887:VAL:HG13	1.80	0.47
2:E:4802:TYR:CE2	2:E:4804:ASN:HB2	2.49	0.47
2:K:616:SER:O	2:K:620:LEU:HD13	2.15	0.47
2:K:2454:ILE:HA	2:K:2457:ILE:HD12	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:1454:THR:HG22	2:H:1456:ASP:H	1.79	0.47
2:H:2454:ILE:HA	2:H:2457:ILE:HD12	1.96	0.47
2:B:529:LEU:O	2:B:536:ASN:ND2	2.48	0.46
2:E:1643:GLU:HG3	2:E:1644:GLU:HG3	1.96	0.46
2:H:1443:GLN:HA	2:H:1557:THR:HG21	1.97	0.46
1:J:4:ILE:HD13	1:J:65:GLN:HG2	1.96	0.46
2:E:1641:ILE:HG22	2:E:1643:GLU:HG2	1.98	0.46
2:H:529:LEU:O	2:H:536:ASN:ND2	2.48	0.46
1:J:74:LEU:HD13	1:J:101:VAL:HB	1.97	0.46
2:K:1743:ARG:NH1	2:K:1964:GLU:OE2	2.44	0.46
2:E:616:SER:O	2:E:620:LEU:HD13	2.15	0.46
2:E:1130:GLN:HG3	2:E:1138:LEU:HA	1.98	0.46
2:E:2461:LEU:HD12	2:E:2462:VAL:HG23	1.97	0.46
2:E:4886:TYR:HD2	2:E:4887:VAL:HG13	1.80	0.46
2:B:746:CYS:HA	2:B:757:PHE:HA	1.97	0.46
2:H:1641:ILE:HG22	2:H:1643:GLU:HG2	1.98	0.46
2:K:529:LEU:O	2:K:536:ASN:ND2	2.48	0.46
2:B:616:SER:O	2:B:620:LEU:HD13	2.15	0.46
2:B:2128:GLN:HE21	2:B:2128:GLN:HA	1.80	0.46
2:B:2461:LEU:HD12	2:B:2462:VAL:HG23	1.97	0.46
2:E:892:THR:N	2:E:902:ARG:O	2.48	0.46
2:H:1643:GLU:HG3	2:H:1644:GLU:HG3	1.96	0.46
2:H:2461:LEU:HD12	2:H:2462:VAL:HG23	1.97	0.46
2:B:215:THR:OG1	2:B:271:GLY:O	2.34	0.46
1:G:4:ILE:HD13	1:G:65:GLN:HG2	1.96	0.46
2:K:1130:GLN:HG3	2:K:1138:LEU:HA	1.98	0.46
2:B:1443:GLN:HA	2:B:1557:THR:HG21	1.97	0.46
2:E:529:LEU:O	2:E:536:ASN:ND2	2.48	0.46
2:K:746:CYS:HA	2:K:757:PHE:HA	1.97	0.46
2:B:2454:ILE:HA	2:B:2457:ILE:HD12	1.96	0.46
1:D:74:LEU:HD13	1:D:101:VAL:HB	1.97	0.46
2:E:2128:GLN:HE21	2:E:2128:GLN:HA	1.80	0.46
2:E:3804:ASN:HB2	2:E:3807:VAL:HG12	1.98	0.46
2:E:4234:GLU:OE2	2:E:5012:TYR:OH	2.30	0.46
2:E:4553:LEU:HD11	2:E:4654:LEU:HD23	1.98	0.46
2:B:1641:ILE:HG22	2:B:1643:GLU:HG2	1.98	0.46
2:E:2475:LEU:HD23	2:E:2475:LEU:H	1.81	0.46
2:H:2475:LEU:H	2:H:2475:LEU:HD23	1.81	0.46
2:K:1252:HIS:CE1	2:K:1255:TYR:HD2	2.34	0.46
3:C:65:ASP:OD2	3:C:67:PRO:HD2	2.17	0.45
2:E:215:THR:OG1	2:E:271:GLY:O	2.34	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:1743:ARG:NH1	2:E:1964:GLU:OE2	2.44	0.45
2:K:215:THR:OG1	2:K:271:GLY:O	2.34	0.45
2:K:4177:GLU:CB	2:K:4981:HIS:HE1	2.30	0.45
2:B:3804:ASN:HB2	2:B:3807:VAL:HG12	1.98	0.45
2:K:668:VAL:HG11	2:K:682:LEU:HD21	1.99	0.45
2:K:2475:LEU:H	2:K:2475:LEU:HD23	1.81	0.45
2:B:668:VAL:HG11	2:B:682:LEU:HD21	1.99	0.45
2:B:892:THR:N	2:B:902:ARG:O	2.48	0.45
2:B:1130:GLN:HG3	2:B:1138:LEU:HA	1.98	0.45
2:B:2381:ILE:HD13	2:B:2470:ILE:HG13	1.99	0.45
2:E:2381:ILE:HD13	2:E:2470:ILE:HG13	1.99	0.45
2:H:2239:TYR:OH	3:I:68:GLU:OE2	2.33	0.45
2:K:2461:LEU:HD12	2:K:2462:VAL:HG23	1.97	0.45
2:E:1443:GLN:HA	2:E:1557:THR:HG21	1.97	0.45
1:G:74:LEU:HD13	1:G:101:VAL:HB	1.97	0.45
2:H:892:THR:N	2:H:902:ARG:O	2.48	0.45
2:K:1443:GLN:HA	2:K:1557:THR:HG21	1.97	0.45
2:E:167:ASP:OD1	2:E:167:ASP:N	2.50	0.45
2:E:499:THR:HG22	2:E:500:ALA:H	1.81	0.45
2:E:2378:LEU:HD12	2:E:2381:ILE:HD11	1.98	0.45
2:H:167:ASP:OD1	2:H:167:ASP:N	2.50	0.45
2:H:1130:GLN:HG3	2:H:1138:LEU:HA	1.98	0.45
2:K:1641:ILE:HG22	2:K:1643:GLU:HG2	1.98	0.45
1:A:74:LEU:HD13	1:A:101:VAL:HB	1.97	0.45
3:F:65:ASP:OD2	3:F:67:PRO:HD2	2.17	0.45
2:H:2128:GLN:HA	2:H:2128:GLN:HE21	1.80	0.45
3:I:65:ASP:OD2	3:I:67:PRO:HD2	2.17	0.45
2:K:1805:LEU:HD13	2:K:1854:ILE:HD12	1.99	0.45
2:H:215:THR:OG1	2:H:271:GLY:O	2.34	0.45
2:K:2128:GLN:HE21	2:K:2128:GLN:HA	1.80	0.45
2:K:2239:TYR:OH	3:L:68:GLU:OE2	2.33	0.45
2:B:1805:LEU:HD13	2:B:1854:ILE:HD12	1.99	0.45
2:H:668:VAL:HG11	2:H:682:LEU:HD21	1.99	0.45
2:B:2284:ASN:ND2	2:B:2287:LEU:HD13	2.32	0.45
2:E:1805:LEU:HD13	2:E:1854:ILE:HD12	1.99	0.45
2:H:257:ARG:HA	2:H:286:THR:HG21	1.99	0.45
2:H:2378:LEU:HD12	2:H:2381:ILE:HD11	1.98	0.45
2:K:167:ASP:N	2:K:167:ASP:OD1	2.50	0.45
2:K:257:ARG:HA	2:K:286:THR:HG21	1.99	0.45
3:L:65:ASP:OD2	3:L:67:PRO:HD2	2.17	0.45
2:B:2475:LEU:HD23	2:B:2475:LEU:H	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:668:VAL:HG11	2:E:682:LEU:HD21	1.99	0.45
2:H:2284:ASN:ND2	2:H:2287:LEU:HD13	2.32	0.45
2:H:3954:LYS:HA	2:H:4014:LEU:HD13	1.99	0.45
2:K:3804:ASN:HB2	2:K:3807:VAL:HG12	1.98	0.45
2:B:676:THR:OG1	2:B:677:ALA:N	2.46	0.44
2:B:2378:LEU:HD12	2:B:2381:ILE:HD11	1.98	0.44
2:B:4553:LEU:HD11	2:B:4654:LEU:HD23	1.98	0.44
2:H:499:THR:HG22	2:H:500:ALA:H	1.81	0.44
2:H:4234:GLU:OE2	2:H:5012:TYR:OH	2.30	0.44
2:B:1252:HIS:CE1	2:B:1255:TYR:HD2	2.34	0.44
2:E:1252:HIS:CE1	2:E:1255:TYR:HD2	2.34	0.44
2:H:1805:LEU:HD13	2:H:1854:ILE:HD12	1.99	0.44
2:H:4553:LEU:HD11	2:H:4654:LEU:HD23	1.98	0.44
2:K:1639:LEU:HD21	2:K:1650:ILE:HD13	1.99	0.44
2:K:2381:ILE:HD13	2:K:2470:ILE:HG13	1.99	0.44
2:H:746:CYS:HA	2:H:757:PHE:HA	1.97	0.44
2:B:499:THR:HG22	2:B:500:ALA:H	1.81	0.44
2:H:1252:HIS:CE1	2:H:1255:TYR:HD2	2.34	0.44
2:H:2381:ILE:HD13	2:H:2470:ILE:HG13	1.99	0.44
2:K:4553:LEU:HD11	2:K:4654:LEU:HD23	1.98	0.44
2:E:2284:ASN:ND2	2:E:2287:LEU:HD13	2.32	0.44
2:H:138:GLN:HG2	2:H:140:ASP:H	1.83	0.44
2:H:1287:LEU:HD13	2:H:1289:LEU:HG	1.99	0.44
2:K:138:GLN:HG2	2:K:140:ASP:H	1.83	0.44
2:K:355:LEU:HB3	2:K:378:LEU:HB3	2.00	0.44
2:K:2284:ASN:ND2	2:K:2287:LEU:HD13	2.32	0.44
2:K:2378:LEU:HD12	2:K:2381:ILE:HD11	1.98	0.44
2:B:355:LEU:HB3	2:B:378:LEU:HB3	2.00	0.44
2:B:1287:LEU:HD13	2:B:1289:LEU:HG	1.99	0.44
2:E:3954:LYS:HA	2:E:4014:LEU:HD13	1.99	0.44
2:H:2172:GLY:H	2:H:2175:GLU:HB2	1.83	0.44
2:B:3954:LYS:HA	2:B:4014:LEU:HD13	1.99	0.44
2:E:214:VAL:HG22	2:E:341:TYR:CZ	2.53	0.44
3:I:21:ASP:HB2	3:I:28:ILE:HD11	2.00	0.44
2:K:892:THR:N	2:K:902:ARG:O	2.48	0.44
2:K:2172:GLY:H	2:K:2175:GLU:HB2	1.83	0.44
2:B:35:LEU:HD13	2:B:49:LEU:HD13	2.00	0.44
2:B:308:HIS:H	2:B:312:THR:HG21	1.83	0.44
2:E:2239:TYR:OH	3:F:68:GLU:OE2	2.33	0.44
2:E:2272:THR:HG23	2:E:2275:ASP:H	1.83	0.44
2:H:214:VAL:HG22	2:H:341:TYR:CZ	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:1639:LEU:HD21	2:H:1650:ILE:HD13	1.99	0.44
2:K:1227:ALA:HB1	2:K:1230:MET:HB2	2.00	0.44
2:B:682:LEU:HD13	2:B:787:VAL:HG11	1.99	0.43
2:B:2172:GLY:H	2:B:2175:GLU:HB2	1.83	0.43
2:B:2457:ILE:HG23	2:E:131:LEU:HD23	2.00	0.43
2:H:308:HIS:H	2:H:312:THR:HG21	1.83	0.43
2:H:1227:ALA:HB1	2:H:1230:MET:HB2	2.00	0.43
2:K:2272:THR:HG23	2:K:2275:ASP:H	1.83	0.43
2:B:138:GLN:HG2	2:B:140:ASP:H	1.83	0.43
2:E:35:LEU:HD13	2:E:49:LEU:HD13	2.00	0.43
2:E:682:LEU:HD13	2:E:787:VAL:HG11	1.99	0.43
2:K:499:THR:HG22	2:K:500:ALA:H	1.81	0.43
2:K:1287:LEU:HD13	2:K:1289:LEU:HG	1.99	0.43
2:B:257:ARG:HA	2:B:286:THR:HG21	1.99	0.43
2:E:257:ARG:HA	2:E:286:THR:HG21	1.99	0.43
2:E:1227:ALA:HB1	2:E:1230:MET:HB2	2.00	0.43
2:E:1287:LEU:HD13	2:E:1289:LEU:HG	1.99	0.43
3:F:21:ASP:HB2	3:F:28:ILE:HD11	2.00	0.43
2:H:35:LEU:HD13	2:H:49:LEU:HD13	2.00	0.43
2:E:2172:GLY:H	2:E:2175:GLU:HB2	1.83	0.43
2:H:355:LEU:HB3	2:H:378:LEU:HB3	2.00	0.43
2:H:3804:ASN:HB2	2:H:3807:VAL:HG12	1.98	0.43
2:K:214:VAL:HG22	2:K:341:TYR:CZ	2.53	0.43
2:K:308:HIS:H	2:K:312:THR:HG21	1.83	0.43
2:H:615:ARG:NH2	2:H:1677:GLY:O	2.52	0.43
2:H:1448:VAL:HG22	2:H:1554:VAL:HG23	2.01	0.43
2:H:2457:ILE:HG23	2:K:131:LEU:HD23	2.00	0.43
2:K:3954:LYS:HA	2:K:4014:LEU:HD13	1.99	0.43
2:B:615:ARG:NH2	2:B:1677:GLY:O	2.52	0.43
2:B:1639:LEU:HD21	2:B:1650:ILE:HD13	1.99	0.43
2:E:1639:LEU:HD21	2:E:1650:ILE:HD13	1.99	0.43
2:K:35:LEU:HD13	2:K:49:LEU:HD13	2.00	0.43
2:B:1227:ALA:HB1	2:B:1230:MET:HB2	2.00	0.43
2:B:214:VAL:HG22	2:B:341:TYR:CZ	2.53	0.43
2:B:804:PRO:HA	2:B:805:PRO:HD3	1.96	0.43
2:B:2272:THR:HG23	2:B:2275:ASP:H	1.83	0.43
2:E:138:GLN:HG2	2:E:140:ASP:H	1.83	0.43
2:E:615:ARG:NH2	2:E:1677:GLY:O	2.52	0.43
2:E:1448:VAL:HG22	2:E:1554:VAL:HG23	2.01	0.43
2:E:2457:ILE:HG23	2:H:131:LEU:HD23	2.00	0.43
2:H:2272:THR:HG23	2:H:2275:ASP:H	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:K:21:VAL:HB	2:K:205:ILE:HD11	2.01	0.43
2:B:1867:ILE:HG22	2:B:1927:LEU:HD23	2.01	0.43
2:E:355:LEU:HB3	2:E:378:LEU:HB3	2.00	0.43
2:B:4016:LYS:HA	2:B:4134:ILE:HD13	2.01	0.42
2:H:21:VAL:HB	2:H:205:ILE:HD11	2.01	0.42
2:K:615:ARG:NH2	2:K:1677:GLY:O	2.52	0.42
2:K:682:LEU:HD13	2:K:787:VAL:HG11	1.99	0.42
2:E:21:VAL:HB	2:E:205:ILE:HD11	2.01	0.42
2:H:682:LEU:HD13	2:H:787:VAL:HG11	1.99	0.42
2:K:4016:LYS:HA	2:K:4134:ILE:HD13	2.01	0.42
3:C:21:ASP:HB2	3:C:28:ILE:HD11	2.00	0.42
2:E:308:HIS:H	2:E:312:THR:HG21	1.83	0.42
2:E:1867:ILE:HG22	2:E:1927:LEU:HD23	2.01	0.42
2:E:4016:LYS:HA	2:E:4134:ILE:HD13	2.01	0.42
3:F:5:LEU:HD21	3:F:74:ALA:HA	2.01	0.42
2:H:942:ALA:N	2:H:1050:GLY:O	2.48	0.42
2:H:1867:ILE:HG22	2:H:1927:LEU:HD23	2.01	0.42
2:H:3625:ARG:HH11	3:I:146:MET:HA	1.85	0.42
2:K:1247:ALA:HA	2:K:1598:GLN:HA	2.01	0.42
2:K:1745:ILE:HD12	2:K:1745:ILE:HA	1.96	0.42
3:L:21:ASP:HB2	3:L:28:ILE:HD11	2.00	0.42
2:B:1247:ALA:HA	2:B:1598:GLN:HA	2.01	0.42
2:B:3625:ARG:HH11	3:C:146:MET:HA	1.85	0.42
3:I:5:LEU:HD21	3:I:74:ALA:HA	2.01	0.42
3:L:33:LEU:HD22	3:L:64:ILE:HG12	2.02	0.42
2:B:131:LEU:HD23	2:K:2457:ILE:HG23	2.00	0.42
2:B:1448:VAL:HG22	2:B:1554:VAL:HG23	2.01	0.42
3:I:33:LEU:HD22	3:I:64:ILE:HG12	2.02	0.42
2:K:1448:VAL:HG22	2:K:1554:VAL:HG23	2.01	0.42
2:K:4634:THR:HG22	2:K:4636:TYR:H	1.85	0.42
2:B:4129:GLU:HB3	2:B:4130:PRO:HD3	2.02	0.42
2:H:49:LEU:HD11	2:H:191:VAL:HG13	2.02	0.42
2:B:21:VAL:HB	2:B:205:ILE:HD11	2.01	0.42
2:B:942:ALA:N	2:B:1050:GLY:O	2.48	0.42
2:B:4634:THR:HG22	2:B:4636:TYR:H	1.85	0.42
2:H:3930:TRP:CD1	2:K:80:GLU:HG3	2.55	0.42
3:C:5:LEU:HD21	3:C:74:ALA:HA	2.01	0.42
2:K:3625:ARG:HH11	3:L:146:MET:HA	1.85	0.42
2:E:49:LEU:HD11	2:E:191:VAL:HG13	2.02	0.42
1:J:35:LYS:HD2	2:K:636:ASN:HD21	1.85	0.42
2:K:1867:ILE:HG22	2:K:1927:LEU:HD23	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:299:LEU:HD23	2:B:299:LEU:H	1.85	0.42
2:B:1465:ASP:OD1	2:B:1465:ASP:N	2.53	0.42
3:C:33:LEU:HD22	3:C:64:ILE:HG12	2.02	0.42
2:E:1247:ALA:HA	2:E:1598:GLN:HA	2.01	0.42
2:E:1526:LEU:HD23	2:E:1526:LEU:H	1.85	0.42
2:E:4129:GLU:HB3	2:E:4130:PRO:HD3	2.02	0.42
2:H:1686:CYS:HB3	2:H:1783:PHE:HZ	1.85	0.42
2:H:4016:LYS:HA	2:H:4134:ILE:HD13	2.01	0.42
2:K:1686:CYS:HB3	2:K:1783:PHE:HZ	1.85	0.42
3:L:5:LEU:HD21	3:L:74:ALA:HA	2.01	0.42
2:B:80:GLU:HG3	2:K:3930:TRP:CD1	2.55	0.41
2:E:181:HIS:ND1	2:E:182:LEU:O	2.53	0.41
1:G:35:LYS:HD2	2:H:636:ASN:HD21	1.85	0.41
2:K:4031:VAL:HG13	2:K:4148:HIS:HA	2.02	0.41
2:B:3930:TRP:CD1	2:E:80:GLU:HG3	2.55	0.41
1:D:35:LYS:HD2	2:E:636:ASN:HD21	1.85	0.41
2:E:1686:CYS:HB3	2:E:1783:PHE:HZ	1.85	0.41
2:E:3625:ARG:HH11	3:F:146:MET:HA	1.85	0.41
2:H:4031:VAL:HG13	2:H:4148:HIS:HA	2.02	0.41
2:B:1857:ASP:N	2:B:1857:ASP:OD1	2.53	0.41
2:E:35:LEU:HD11	2:E:189:LEU:HD13	2.02	0.41
2:E:2243:ILE:HA	3:F:2:ALA:HB3	2.03	0.41
2:E:3936:ASP:OD1	2:E:3936:ASP:N	2.53	0.41
3:F:33:LEU:HD22	3:F:64:ILE:HG12	2.02	0.41
2:H:4634:THR:HG22	2:H:4636:TYR:H	1.85	0.41
2:K:49:LEU:HD11	2:K:191:VAL:HG13	2.02	0.41
2:K:1526:LEU:HD23	2:K:1526:LEU:H	1.85	0.41
2:B:1686:CYS:HB3	2:B:1783:PHE:HZ	1.85	0.41
2:B:2243:ILE:HA	3:C:2:ALA:HB3	2.03	0.41
2:B:2455:ARG:HE	2:B:2459:ARG:HH22	1.68	0.41
2:E:2455:ARG:HE	2:E:2459:ARG:HH22	1.68	0.41
2:H:684:VAL:HG22	2:H:781:VAL:HG23	2.02	0.41
2:H:1745:ILE:HD12	2:H:1745:ILE:HA	1.96	0.41
2:K:181:HIS:ND1	2:K:182:LEU:O	2.53	0.41
2:K:1465:ASP:OD1	2:K:1465:ASP:N	2.53	0.41
2:E:684:VAL:HG22	2:E:781:VAL:HG23	2.02	0.41
2:E:3930:TRP:CD1	2:H:80:GLU:HG3	2.55	0.41
2:H:1247:ALA:HA	2:H:1598:GLN:HA	2.01	0.41
2:H:1465:ASP:OD1	2:H:1465:ASP:N	2.53	0.41
2:H:1526:LEU:HD23	2:H:1526:LEU:H	1.85	0.41
2:K:4129:GLU:HB3	2:K:4130:PRO:HD3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:4031:VAL:HG13	2:B:4148:HIS:HA	2.02	0.41
2:B:4700:ASP:HA	2:B:4776:TRP:HE1	1.86	0.41
2:E:4700:ASP:HA	2:E:4776:TRP:HE1	1.86	0.41
2:B:1526:LEU:H	2:B:1526:LEU:HD23	1.85	0.41
2:E:1465:ASP:N	2:E:1465:ASP:OD1	2.53	0.41
2:K:1600:LEU:HD23	2:K:1600:LEU:HA	1.96	0.41
2:K:2455:ARG:HE	2:K:2459:ARG:HH22	1.68	0.41
2:B:49:LEU:HD11	2:B:191:VAL:HG13	2.02	0.41
2:B:167:ASP:N	2:B:167:ASP:OD1	2.50	0.41
2:B:687:ALA:HA	2:B:713:SER:HA	2.03	0.41
2:B:3936:ASP:N	2:B:3936:ASP:OD1	2.53	0.41
2:E:143:GLY:HA2	2:E:147:TRP:HE1	1.86	0.41
2:E:1857:ASP:N	2:E:1857:ASP:OD1	2.53	0.41
2:H:143:GLY:HA2	2:H:147:TRP:HE1	1.86	0.41
2:H:687:ALA:HA	2:H:713:SER:HA	2.03	0.41
2:H:4129:GLU:HB3	2:H:4130:PRO:HD3	2.02	0.41
2:K:299:LEU:HD23	2:K:299:LEU:H	1.85	0.41
2:H:1857:ASP:OD1	2:H:1857:ASP:N	2.53	0.41
2:K:2258:LEU:HD13	2:K:2276:VAL:HG13	2.03	0.41
3:L:17:PHE:CE1	3:L:28:ILE:HD12	2.57	0.41
1:A:35:LYS:HD2	2:B:636:ASN:HD21	1.85	0.40
2:B:35:LEU:HD11	2:B:189:LEU:HD13	2.02	0.40
2:B:1101:ARG:HB3	2:B:1123:VAL:HG21	2.04	0.40
2:E:663:TYR:HD1	2:E:747:CYS:HB3	1.86	0.40
2:H:1499:ASP:OD1	2:H:1499:ASP:N	2.55	0.40
2:K:143:GLY:HA2	2:K:147:TRP:HE1	1.86	0.40
2:K:638:ILE:HD12	2:K:1638:ALA:HB3	2.03	0.40
2:K:684:VAL:HG22	2:K:781:VAL:HG23	2.02	0.40
2:K:1101:ARG:HB3	2:K:1123:VAL:HG21	2.04	0.40
2:K:1857:ASP:OD1	2:K:1857:ASP:N	2.53	0.40
2:K:4700:ASP:HA	2:K:4776:TRP:HE1	1.86	0.40
2:B:638:ILE:HD12	2:B:1638:ALA:HB3	2.03	0.40
2:B:663:TYR:HD1	2:B:747:CYS:HB3	1.86	0.40
2:E:687:ALA:HA	2:E:713:SER:HA	2.03	0.40
2:E:4634:THR:HG22	2:E:4636:TYR:H	1.85	0.40
2:H:288:GLY:HA3	2:H:405:TYR:CZ	2.56	0.40
2:H:299:LEU:HD23	2:H:299:LEU:H	1.85	0.40
2:H:609:CYS:HB3	2:H:612:VAL:O	2.22	0.40
2:K:35:LEU:HD11	2:K:189:LEU:HD13	2.02	0.40
2:B:143:GLY:HA2	2:B:147:TRP:HE1	1.86	0.40
2:B:684:VAL:HG22	2:B:781:VAL:HG23	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:3905:THR:HG23	2:E:3906:THR:HG23	2.04	0.40
2:H:181:HIS:ND1	2:H:182:LEU:O	2.53	0.40
2:H:1777:HIS:HB3	2:H:1799:LEU:HD13	2.04	0.40
2:H:1834:SER:HB2	2:H:1837:PHE:HD1	1.87	0.40
2:H:2455:ARG:HE	2:H:2459:ARG:HH22	1.68	0.40
2:K:288:GLY:HA3	2:K:405:TYR:CZ	2.56	0.40
2:K:2284:ASN:HD21	2:K:2287:LEU:HD13	1.87	0.40
2:B:2258:LEU:HD13	2:B:2276:VAL:HG13	2.03	0.40
2:H:2243:ILE:HA	3:I:2:ALA:HB3	2.03	0.40
2:H:3622:LYS:C	2:H:3624:ARG:H	2.25	0.40
2:K:687:ALA:HA	2:K:713:SER:HA	2.03	0.40
2:K:3936:ASP:N	2:K:3936:ASP:OD1	2.53	0.40
2:B:288:GLY:HA3	2:B:405:TYR:CZ	2.56	0.40
2:B:336:PRO:HA	2:B:337:PRO:HD3	1.89	0.40
3:C:17:PHE:CE1	3:C:28:ILE:HD12	2.57	0.40
2:E:609:CYS:HB3	2:E:612:VAL:O	2.22	0.40
2:E:2258:LEU:HD13	2:E:2276:VAL:HG13	2.03	0.40
2:E:4031:VAL:HG13	2:E:4148:HIS:HA	2.02	0.40
3:F:17:PHE:CE1	3:F:28:ILE:HD12	2.57	0.40
2:H:4700:ASP:HA	2:H:4776:TRP:HE1	1.86	0.40
2:K:2243:ILE:HA	3:L:2:ALA:HB3	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [\(i\)](#)

5.3.1 Protein backbone [\(i\)](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	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

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
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
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. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	838	HIS
2	B	2128	GLN
2	B	3955	GLN
2	B	4976	HIS
2	E	838	HIS
2	E	2128	GLN
2	E	3955	GLN
2	E	4981	HIS
2	H	838	HIS
2	H	2128	GLN
2	H	3955	GLN
2	H	4981	HIS
2	K	838	HIS
2	K	2128	GLN
2	K	3955	GLN
2	K	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

All 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
1	E	1054:GLU	C	1071:ARG	N	36.98
1	H	1054:GLU	C	1071:ARG	N	36.98
1	K	1054:GLU	C	1071:ARG	N	36.98
1	B	854:CYS	C	866:HIS	N	29.09
1	E	854:CYS	C	866:HIS	N	29.09
1	H	854:CYS	C	866:HIS	N	29.09
1	K	854:CYS	C	866:HIS	N	29.09
1	B	3606:UNK	C	3617:HIS	N	28.52

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	3606:UNK	C	3617:HIS	N	28.52
1	H	3606:UNK	C	3617:HIS	N	28.52
1	K	3606:UNK	C	3617:HIS	N	28.52
1	B	4245:GLN	C	4315:UNK	N	27.59
1	E	4245:GLN	C	4315:UNK	N	27.59
1	H	4245:GLN	C	4315:UNK	N	27.59
1	K	4245:GLN	C	4315:UNK	N	27.59
1	B	2700:UNK	C	2736:ASP	N	25.87
1	E	2700:UNK	C	2736:ASP	N	25.87
1	H	2700:UNK	C	2736:ASP	N	25.87
1	K	2700:UNK	C	2736:ASP	N	25.87
1	B	2830:GLU	C	2855:TYR	N	23.98
1	E	2830:GLU	C	2855:TYR	N	23.98
1	H	2830:GLU	C	2855:TYR	N	23.98
1	K	2830:GLU	C	2855:TYR	N	23.98
1	B	84:ASN	C	97:GLY	N	23.34
1	E	84:ASN	C	97:GLY	N	23.34
1	H	84:ASN	C	97:GLY	N	23.34
1	K	84:ASN	C	97:GLY	N	23.34
1	B	2939:ARG	C	2956:UNK	N	23.02
1	E	2939:ARG	C	2956:UNK	N	23.02
1	H	2939:ARG	C	2956:UNK	N	23.02
1	K	2939:ARG	C	2956:UNK	N	23.02
1	B	3555:UNK	C	3565:UNK	N	22.27
1	E	3555:UNK	C	3565:UNK	N	22.27
1	H	3555:UNK	C	3565:UNK	N	22.27
1	K	3555:UNK	C	3565:UNK	N	22.27
1	B	1299:GLN	C	1428:LEU	N	21.92
1	E	1299:GLN	C	1428:LEU	N	21.92
1	H	1299:GLN	C	1428:LEU	N	21.92
1	K	1299:GLN	C	1428:LEU	N	21.92
1	B	3574:UNK	C	3586:UNK	N	21.88
1	E	3574:UNK	C	3586:UNK	N	21.88
1	H	3574:UNK	C	3586:UNK	N	21.88
1	K	3574:UNK	C	3586:UNK	N	21.88
1	B	4737:GLU	C	4769:ILE	N	20.65
1	E	4737:GLU	C	4769:ILE	N	20.65
1	H	4737:GLU	C	4769:ILE	N	20.65
1	K	4737:GLU	C	4769:ILE	N	20.65
1	B	2385:ILE	C	2418:HIS	N	18.54
1	E	2385:ILE	C	2418:HIS	N	18.54
1	H	2385:ILE	C	2418:HIS	N	18.54

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	K	2385:ILE	C	2418:HIS	N	18.54
1	B	3358:UNK	C	3365:UNK	N	17.90
1	E	3358:UNK	C	3365:UNK	N	17.90
1	H	3358:UNK	C	3365:UNK	N	17.90
1	K	3358:UNK	C	3365:UNK	N	17.90
1	B	2046:GLN	C	2092:LEU	N	17.87
1	E	2046:GLN	C	2092:LEU	N	17.87
1	H	2046:GLN	C	2092:LEU	N	17.87
1	K	2046:GLN	C	2092:LEU	N	17.87
1	B	2653:UNK	C	2664:UNK	N	17.50
1	E	2653:UNK	C	2664:UNK	N	17.50
1	H	2653:UNK	C	2664:UNK	N	17.50
1	K	2653:UNK	C	2664:UNK	N	17.50
1	B	3193:UNK	C	3202:UNK	N	17.22
1	E	3193:UNK	C	3202:UNK	N	17.22
1	H	3193:UNK	C	3202:UNK	N	17.22
1	K	3193:UNK	C	3202:UNK	N	17.22
1	B	3733:GLU	C	3747:SER	N	15.80
1	E	3733:GLU	C	3747:SER	N	15.80
1	H	3733:GLU	C	3747:SER	N	15.80
1	K	3733:GLU	C	3747:SER	N	15.80
1	B	3385:UNK	C	3399:PHE	N	15.58
1	E	3385:UNK	C	3399:PHE	N	15.58
1	H	3385:UNK	C	3399:PHE	N	15.58
1	K	3385:UNK	C	3399:PHE	N	15.58
1	B	3062:UNK	C	3146:UNK	N	15.38
1	E	3062:UNK	C	3146:UNK	N	15.38
1	H	3062:UNK	C	3146:UNK	N	15.38
1	K	3062:UNK	C	3146:UNK	N	15.38
1	B	3238:UNK	C	3278:UNK	N	14.98
1	E	3238:UNK	C	3278:UNK	N	14.98
1	H	3238:UNK	C	3278:UNK	N	14.98
1	K	3238:UNK	C	3278:UNK	N	14.98
1	B	2978:UNK	C	2999:UNK	N	14.76
1	E	2978:UNK	C	2999:UNK	N	14.76
1	H	2978:UNK	C	2999:UNK	N	14.76
1	K	2978:UNK	C	2999:UNK	N	14.76
1	B	3461:VAL	C	3509:UNK	N	13.70
1	E	3461:VAL	C	3509:UNK	N	13.70
1	H	3461:VAL	C	3509:UNK	N	13.70
1	K	3461:VAL	C	3509:UNK	N	13.70
1	B	3018:UNK	C	3032:UNK	N	12.78

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	3018:UNK	C	3032:UNK	N	12.78
1	H	3018:UNK	C	3032:UNK	N	12.78
1	K	3018:UNK	C	3032:UNK	N	12.78
1	B	2014:LYS	C	2023:PRO	N	12.65
1	E	2014:LYS	C	2023:PRO	N	12.65
1	H	2014:LYS	C	2023:PRO	N	12.65
1	K	2014:LYS	C	2023:PRO	N	12.65
1	B	2683:UNK	C	2688:UNK	N	12.62
1	E	2683:UNK	C	2688:UNK	N	12.62
1	H	2683:UNK	C	2688:UNK	N	12.62
1	K	2683:UNK	C	2688:UNK	N	12.62
1	B	2571:ALA	C	2579:MET	N	12.58
1	E	2571:ALA	C	2579:MET	N	12.58
1	H	2571:ALA	C	2579:MET	N	12.58
1	K	2571:ALA	C	2579:MET	N	12.58
1	B	3166:UNK	C	3173:UNK	N	12.43
1	E	3166:UNK	C	3173:UNK	N	12.43
1	H	3166:UNK	C	3173:UNK	N	12.43
1	K	3166:UNK	C	3173:UNK	N	12.43
1	B	3308:UNK	C	3320:UNK	N	12.24
1	E	3308:UNK	C	3320:UNK	N	12.24
1	H	3308:UNK	C	3320:UNK	N	12.24
1	K	3308:UNK	C	3320:UNK	N	12.24
1	B	361:ALA	C	372:LEU	N	12.09
1	E	361:ALA	C	372:LEU	N	12.09
1	H	361:ALA	C	372:LEU	N	12.09
1	K	361:ALA	C	372:LEU	N	12.09
1	B	2629:PHE	C	2641:UNK	N	12.03
1	E	2629:PHE	C	2641:UNK	N	12.03
1	H	2629:PHE	C	2641:UNK	N	12.03
1	K	2629:PHE	C	2641:UNK	N	12.03
1	B	4090:LYS	C	4109:UNK	N	11.95
1	E	4090:LYS	C	4109:UNK	N	11.95
1	H	4090:LYS	C	4109:UNK	N	11.95
1	K	4090:LYS	C	4109:UNK	N	11.95
1	B	1750:PRO	C	1760:ARG	N	11.65
1	E	1750:PRO	C	1760:ARG	N	11.65
1	H	1750:PRO	C	1760:ARG	N	11.65
1	K	1750:PRO	C	1760:ARG	N	11.65
1	B	3544:UNK	C	3548:UNK	N	11.53
1	E	3544:UNK	C	3548:UNK	N	11.53
1	H	3544:UNK	C	3548:UNK	N	11.53

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	K	3544:UNK	C	3548:UNK	N	11.53
1	B	3217:UNK	C	3225:UNK	N	11.39
1	E	3217:UNK	C	3225:UNK	N	11.39
1	H	3217:UNK	C	3225:UNK	N	11.39
1	K	3217:UNK	C	3225:UNK	N	11.39
1	B	1501:VAL	C	1510:SER	N	11.35
1	E	1501:VAL	C	1510:SER	N	11.35
1	H	1501:VAL	C	1510:SER	N	11.35
1	K	1501:VAL	C	1510:SER	N	11.35
1	B	3047:UNK	C	3051:UNK	N	11.02
1	E	3047:UNK	C	3051:UNK	N	11.02
1	H	3047:UNK	C	3051:UNK	N	11.02
1	K	3047:UNK	C	3051:UNK	N	11.02
1	B	1788:PRO	C	1794:GLU	N	10.90
1	E	1788:PRO	C	1794:GLU	N	10.90
1	H	1788:PRO	C	1794:GLU	N	10.90
1	K	1788:PRO	C	1794:GLU	N	10.90
1	B	4114:UNK	C	4122:GLU	N	10.72
1	E	4114:UNK	C	4122:GLU	N	10.72
1	H	4114:UNK	C	4122:GLU	N	10.72
1	K	4114:UNK	C	4122:GLU	N	10.72
1	B	1871:VAL	C	1924:GLU	N	10.67
1	E	1871:VAL	C	1924:GLU	N	10.67
1	H	1871:VAL	C	1924:GLU	N	10.67
1	K	1871:VAL	C	1924:GLU	N	10.67
1	B	3335:UNK	C	3346:UNK	N	10.58
1	E	3335:UNK	C	3346:UNK	N	10.58
1	H	3335:UNK	C	3346:UNK	N	10.58
1	K	3335:UNK	C	3346:UNK	N	10.58
1	B	3288:UNK	C	3292:UNK	N	10.44
1	E	3288:UNK	C	3292:UNK	N	10.44
1	H	3288:UNK	C	3292:UNK	N	10.44
1	K	3288:UNK	C	3292:UNK	N	10.44
1	B	323:LEU	C	328:LYS	N	10.40
1	E	323:LEU	C	328:LYS	N	10.40
1	H	323:LEU	C	328:LYS	N	10.40
1	K	323:LEU	C	328:LYS	N	10.40
1	B	4585:PRO	C	4626:VAL	N	10.08
1	E	4585:PRO	C	4626:VAL	N	10.08
1	H	4585:PRO	C	4626:VAL	N	10.08
1	K	4585:PRO	C	4626:VAL	N	10.08
1	B	2535:ALA	C	2549:LEU	N	9.70

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	2535:ALA	C	2549:LEU	N	9.70
1	H	2535:ALA	C	2549:LEU	N	9.70
1	K	2535:ALA	C	2549:LEU	N	9.70
1	B	2478:PRO	C	2491:MET	N	9.63
1	E	2478:PRO	C	2491:MET	N	9.63
1	H	2478:PRO	C	2491:MET	N	9.63
1	K	2478:PRO	C	2491:MET	N	9.63
1	B	3526:UNK	C	3534:UNK	N	9.43
1	E	3526:UNK	C	3534:UNK	N	9.43
1	H	3526:UNK	C	3534:UNK	N	9.43
1	K	3526:UNK	C	3534:UNK	N	9.43
1	B	2263:GLY	C	2267:GLY	N	8.79
1	E	2263:GLY	C	2267:GLY	N	8.79
1	H	2263:GLY	C	2267:GLY	N	8.79
1	K	2263:GLY	C	2267:GLY	N	8.79
1	B	3861:ILE	C	3866:GLY	N	8.58
1	E	3861:ILE	C	3866:GLY	N	8.58
1	H	3861:ILE	C	3866:GLY	N	8.58
1	K	3861:ILE	C	3866:GLY	N	8.58
1	B	2216:LEU	C	2225:ARG	N	7.09
1	E	2216:LEU	C	2225:ARG	N	7.09
1	H	2216:LEU	C	2225:ARG	N	7.09
1	K	2216:LEU	C	2225:ARG	N	7.09
1	B	4219:GLU	C	4225:LYS	N	6.52
1	E	4219:GLU	C	4225:LYS	N	6.52
1	H	4219:GLU	C	4225:LYS	N	6.52
1	K	4219:GLU	C	4225:LYS	N	6.52
1	B	1275:ARG	C	1282:SER	N	6.22
1	E	1275:ARG	C	1282:SER	N	6.22
1	H	1275:ARG	C	1282:SER	N	6.22
1	K	1275:ARG	C	1282:SER	N	6.22
1	B	4863:LYS	C	4872:MET	N	5.66
1	E	4863:LYS	C	4872:MET	N	5.66
1	H	4863:LYS	C	4872:MET	N	5.66
1	K	4863:LYS	C	4872:MET	N	5.66
1	B	1478:ASP	C	1482:ASN	N	5.62
1	E	1478:ASP	C	1482:ASN	N	5.62
1	H	1478:ASP	C	1482:ASN	N	5.62
1	K	1478:ASP	C	1482:ASN	N	5.62
1	B	2527:PHE	C	2528:LEU	N	3.17
1	E	2527:PHE	C	2528:LEU	N	3.17
1	H	2527:PHE	C	2528:LEU	N	3.17

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Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	K	2527:PHE	C	2528:LEU	N	3.17

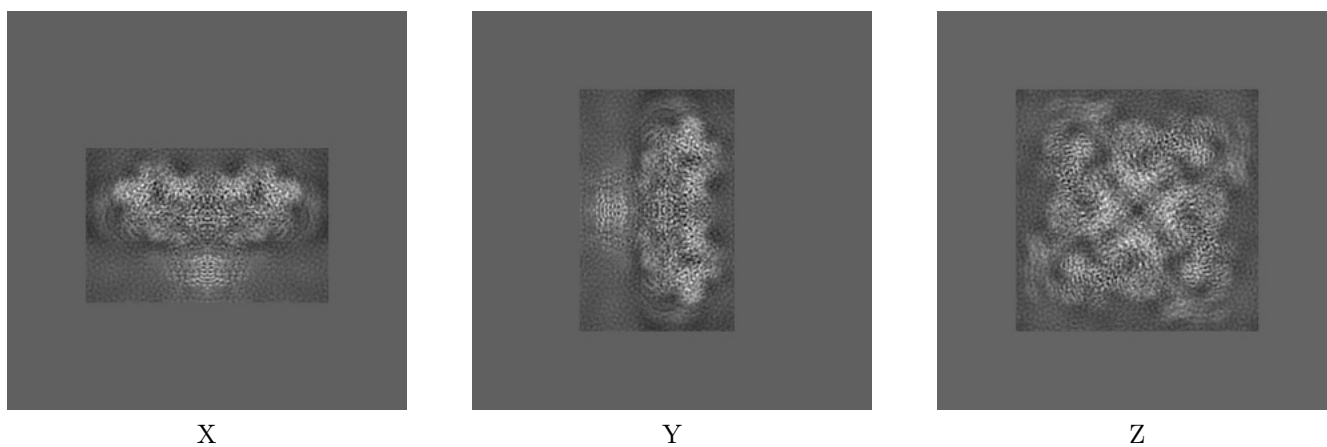
6 Map visualisation [i](#)

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](#)

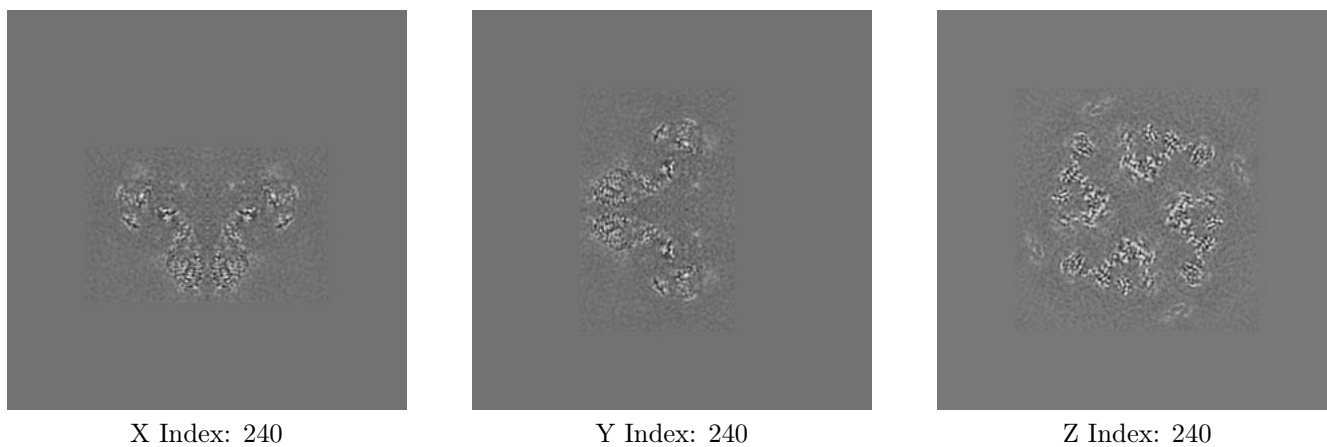
6.1.1 Primary map



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

6.2 Central slices [i](#)

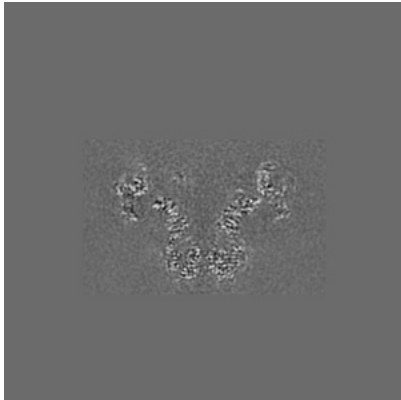
6.2.1 Primary map



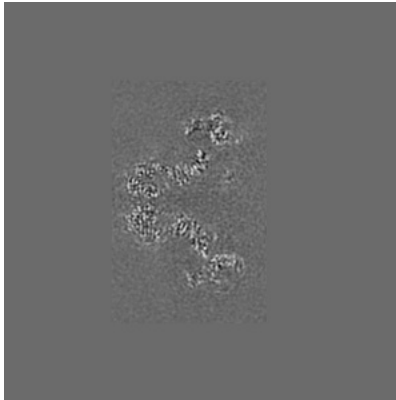
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

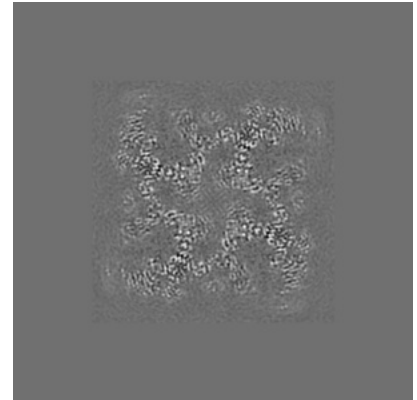
6.3.1 Primary map



X Index: 236



Y Index: 236

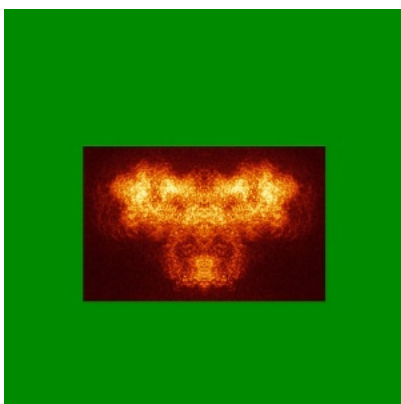


Z Index: 265

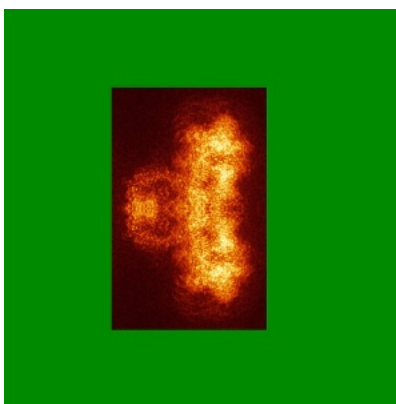
The images above show the largest variance slices of the map in three orthogonal directions.

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

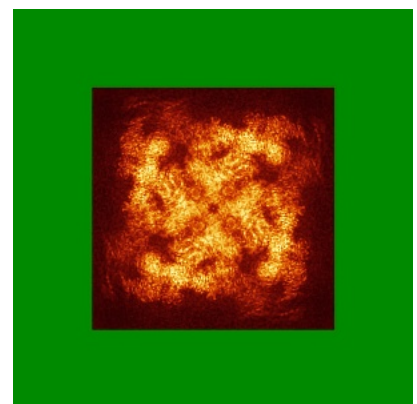
6.4.1 Primary map



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.

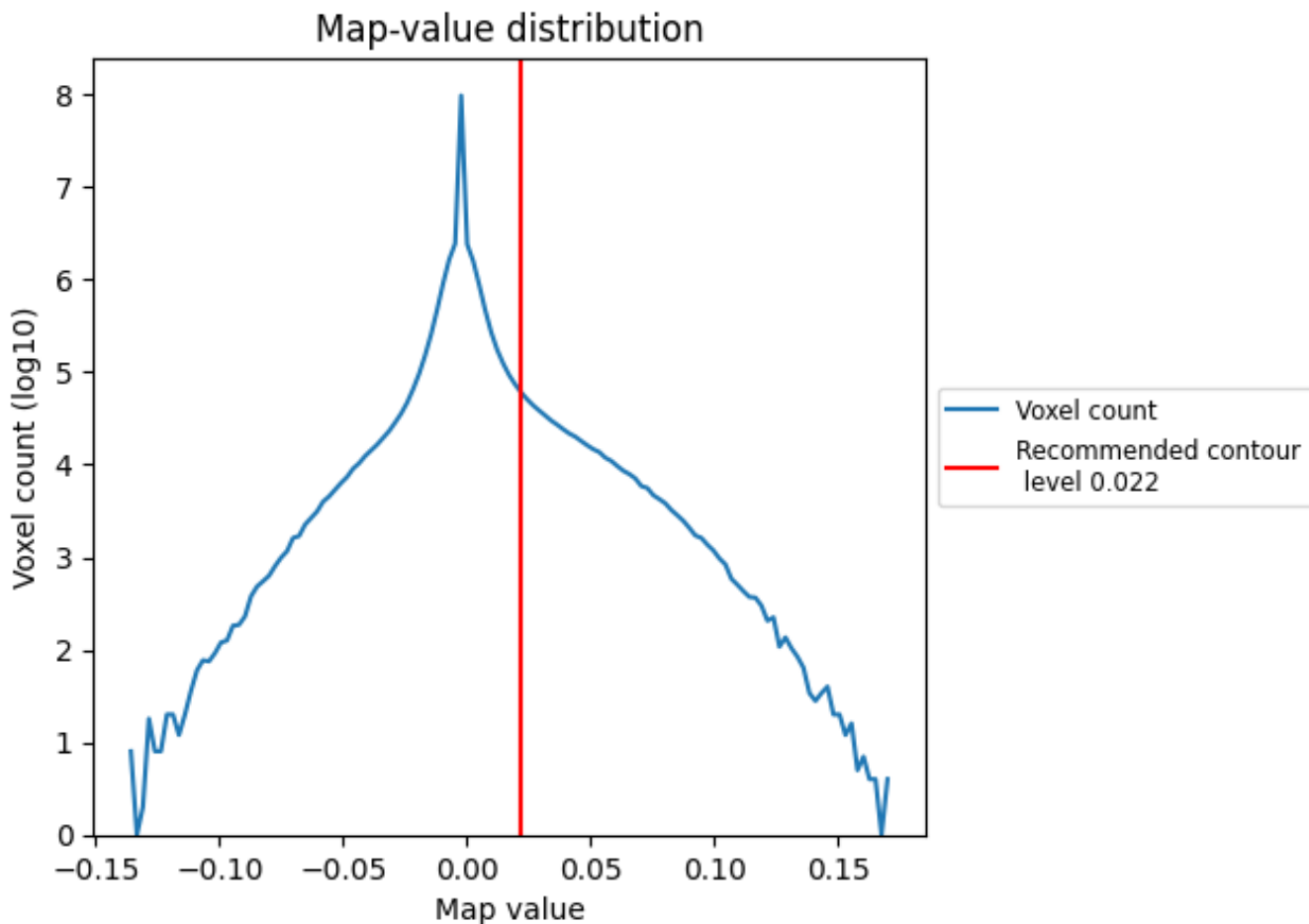
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

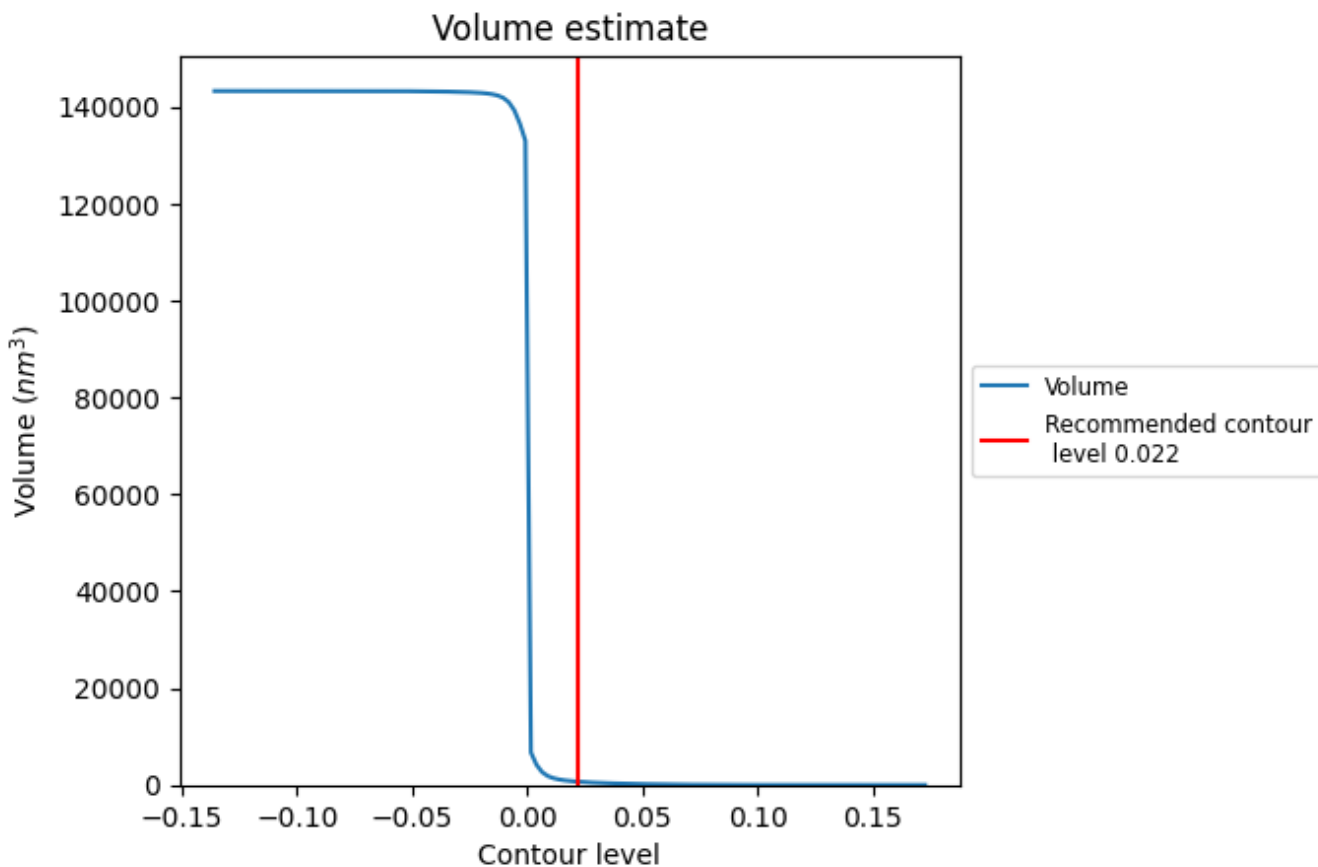
This section contains the results of statistical analysis of the map.

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.

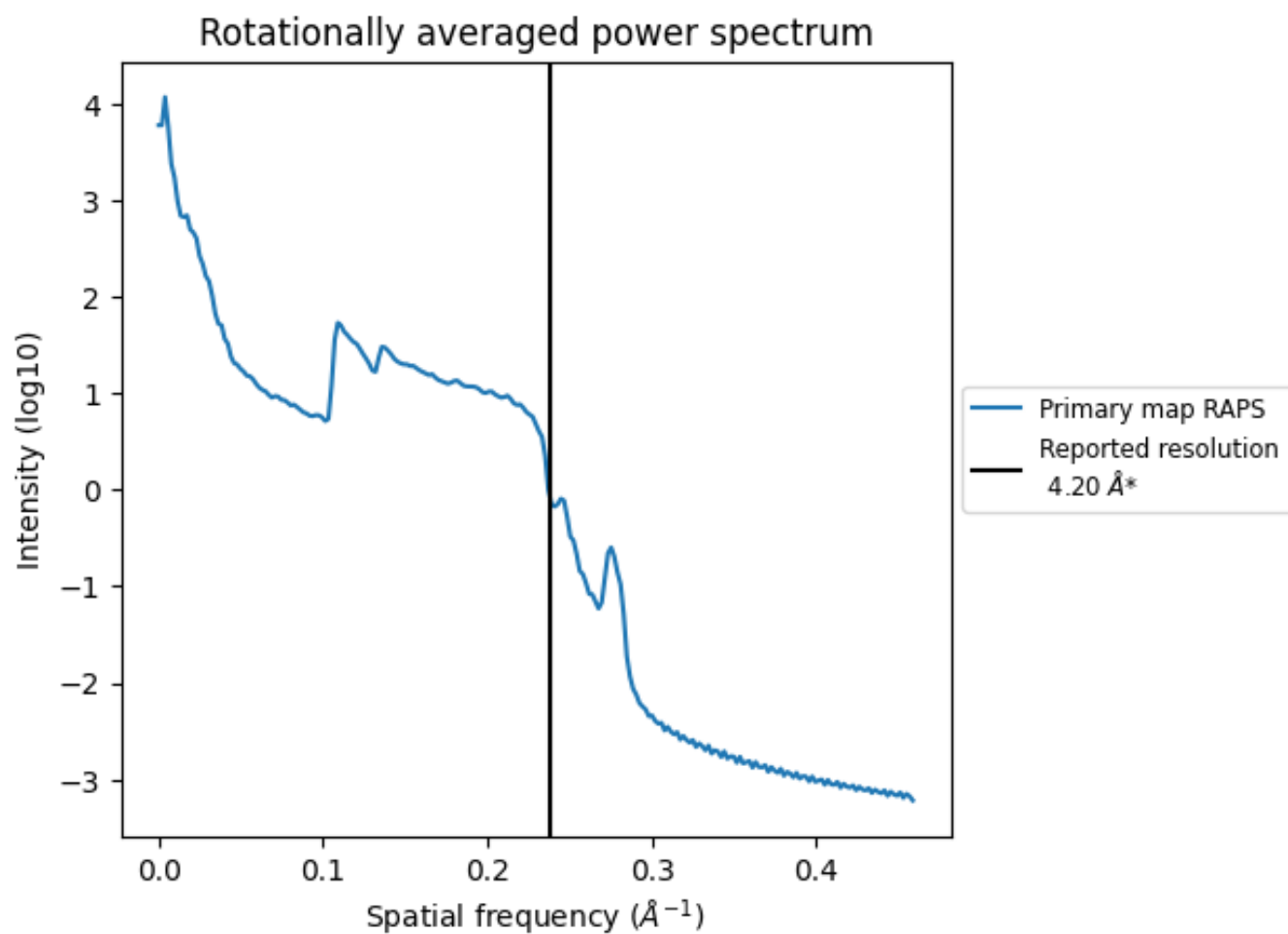
7.2 Volume estimate [i](#)



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}

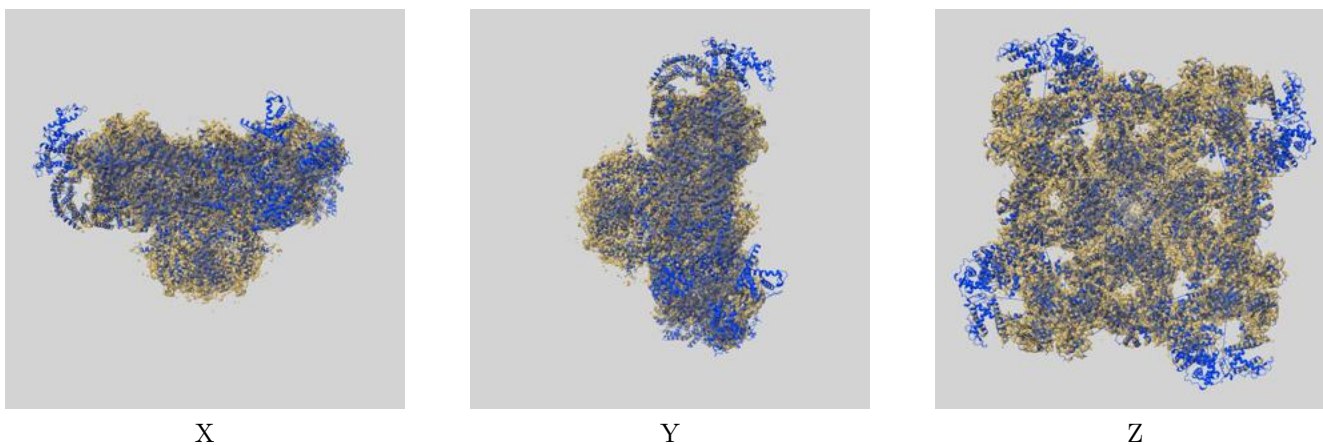
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

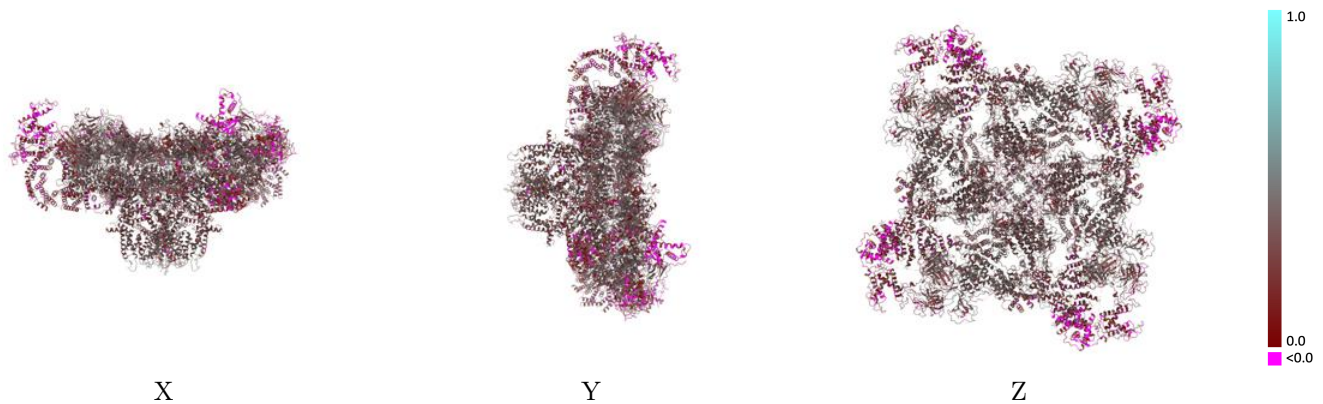
This section contains information regarding the fit between EMDB map EMD-22016 and PDB model 6X33. Per-residue inclusion information can be found in section 3 on page 6.

9.1 Map-model overlay [i](#)



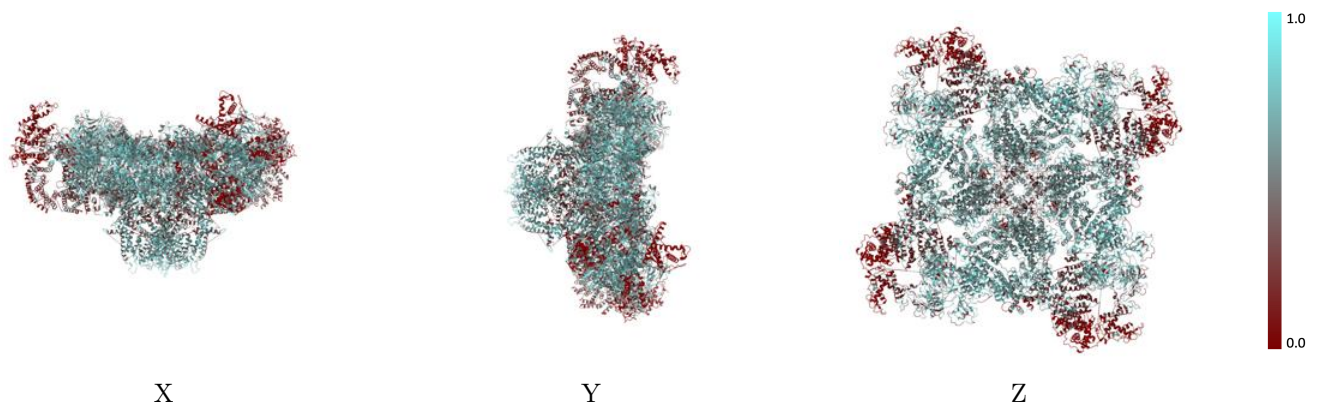
The images above show the 3D surface view of the map at the recommended contour level 0.022 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



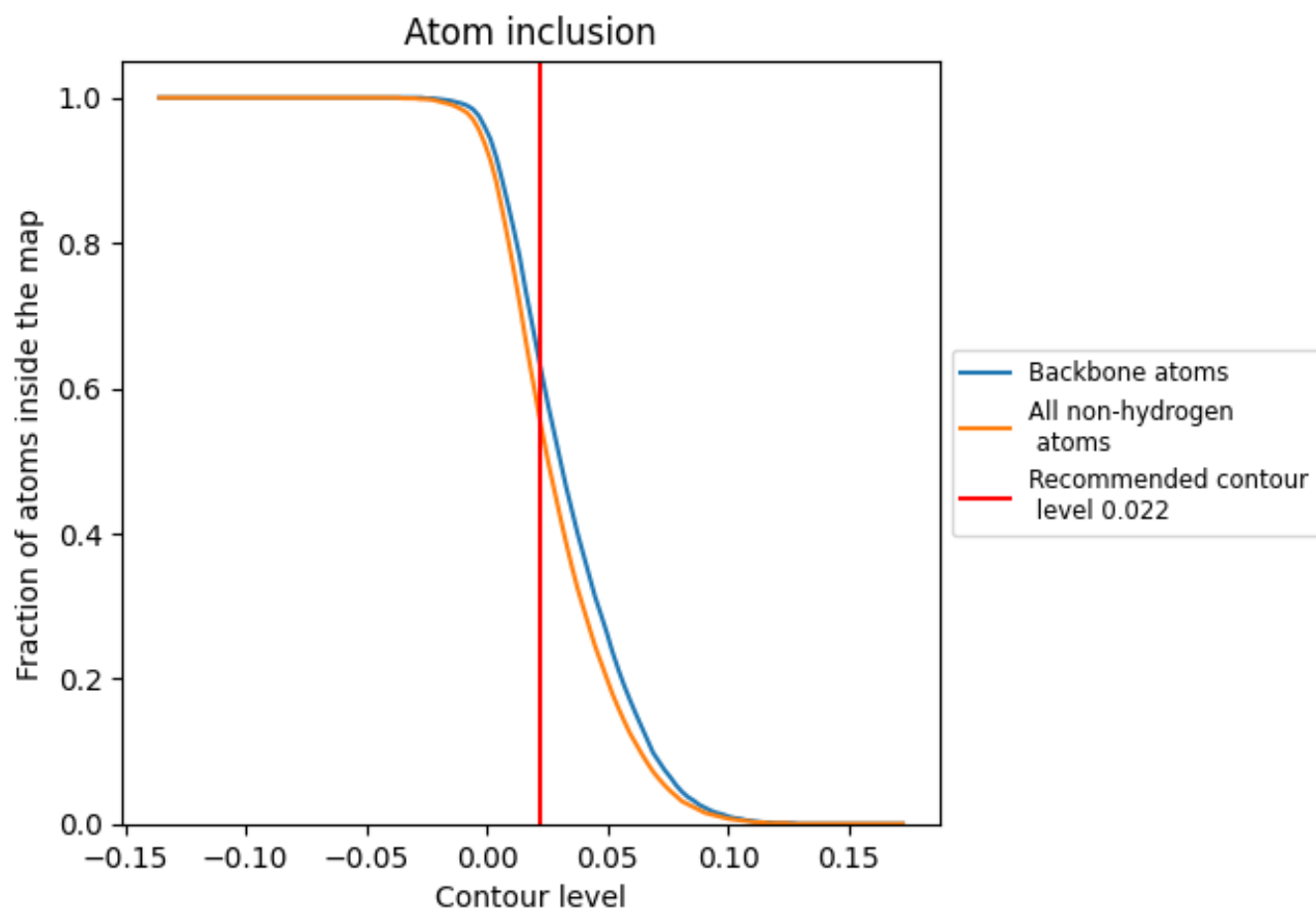
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

