



Full wwPDB EM Validation Report ⓘ

Oct 19, 2024 – 10:26 PM EDT

PDB ID : 5VKU
EMDB ID : EMD-8703
Title : An atomic structure of the human cytomegalovirus (HCMV) capsid with its securing layer of pp150 tegument protein
Authors : Yu, X.; Jih, J.; Jiang, J.; Zhou, H.
Deposited on : 2017-04-24
Resolution : 3.90 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:

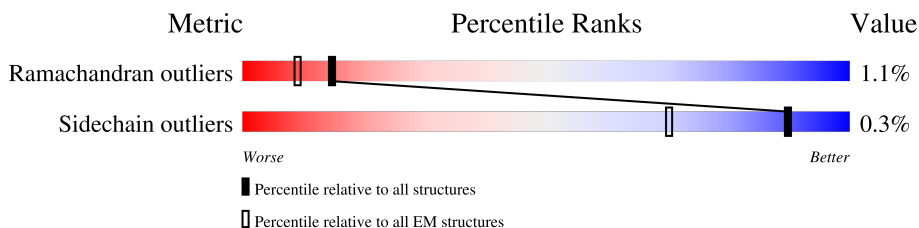
EMDB validation analysis : 0.0.1.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

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 3.90 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)
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	0	285	58% 99% .
1	1	285	56% 99% .
1	2	285	93% 99% .
1	3	285	75% 98% .
1	4	285	53% 99% .
1	5	285	63% 99% .
1	6	285	60% 99% .
1	7	285	49% 99% .
1	8	285	59% 99% .

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Mol	Chain	Length	Quality of chain
1	9	285	60% 99%
1	v	285	97%
1	w	285	97%
1	x	285	85% 99%
1	y	285	54% 99%
1	z	285	53% 99%
2	A	1370	68% 96%
2	B	1370	46% 95%
2	C	1370	39% 97%
2	D	1370	36% 97%
2	E	1370	34% 96%
2	F	1370	38% 97%
2	G	1370	47% 97%
2	H	1370	31% 98%
2	I	1370	30% 97%
2	J	1370	29% 96%
2	K	1370	29% 98%
2	L	1370	30% 98%
2	M	1370	34% 98%
2	N	1370	30% 98%
2	O	1370	29% 97%
2	P	1370	31% 97%
3	Q	75	68% 84% 16%
3	R	75	67% 84% 16%
3	S	75	56% 84% 16%

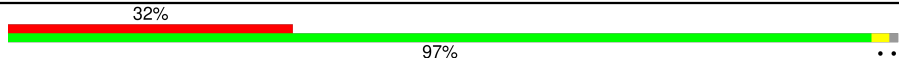
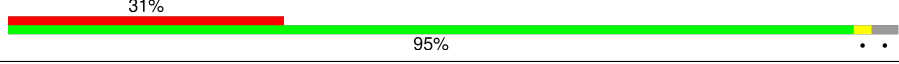
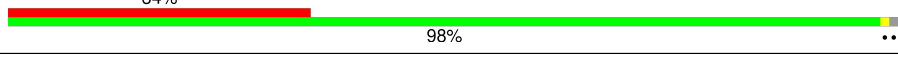
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Mol	Chain	Length	Quality of chain
3	T	75	55% 84% 16%
3	U	75	56% 84% 16%
3	V	75	57% 83% 16%
3	W	75	64% 84% 16%
3	X	75	52% 84% 16%
3	Y	75	47% 83% 16%
3	Z	75	43% 84% 16%
3	a	75	51% 84% 16%
3	b	75	49% 83% 16%
3	c	75	53% 84% 16%
3	d	75	41% 84% 16%
3	e	75	40% 84% 16%
3	f	75	45% 84% 16%
4	g	290	74% 88% 10%
4	j	290	30% 98% .
4	m	290	39% 99% .
4	p	290	32% 98% .
4	s	290	29% 98% .
5	h	306	69% 92% 5%
5	i	306	76% 92% 7%
5	k	306	34% 93% 5%
5	l	306	36% 98% ..
5	n	306	41% 94% .
5	o	306	39% 94% 5%
5	q	306	33% 96% .

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Mol	Chain	Length	Quality of chain
5	r	306	
5	t	306	
5	u	306	

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 248627 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 Tegument protein pp150.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	285	2328	1468	426	421	13	0	0
1	1	285	2328	1468	426	421	13	0	0
1	2	285	2328	1468	426	421	13	0	0
1	3	285	2328	1468	426	421	13	0	0
1	4	285	2328	1468	426	421	13	0	0
1	5	285	2328	1468	426	421	13	0	0
1	6	285	2328	1468	426	421	13	0	0
1	7	285	2328	1468	426	421	13	0	0
1	8	285	2328	1468	426	421	13	0	0
1	9	285	2328	1468	426	421	13	0	0
1	v	285	2328	1468	426	421	13	0	0
1	w	285	2328	1468	426	421	13	0	0
1	x	285	2328	1468	426	421	13	0	0
1	y	285	2328	1468	426	421	13	0	0
1	z	285	2328	1468	426	421	13	0	0

- Molecule 2 is a protein called Major capsid protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	1329	Total 10527	C 6711	N 1822	O 1933	S 61	0	0
2	B	1335	Total 10574	C 6733	N 1830	O 1950	S 61	0	0
2	C	1349	Total 10686	C 6805	N 1852	O 1968	S 61	0	0
2	D	1346	Total 10670	C 6796	N 1849	O 1964	S 61	0	0
2	E	1347	Total 10676	C 6799	N 1850	O 1966	S 61	0	0
2	F	1350	Total 10693	C 6809	N 1853	O 1970	S 61	0	0
2	G	1351	Total 10705	C 6816	N 1854	O 1974	S 61	0	0
2	H	1352	Total 10710	C 6819	N 1855	O 1975	S 61	0	0
2	I	1347	Total 10676	C 6799	N 1850	O 1966	S 61	0	0
2	J	1335	Total 10581	C 6739	N 1837	O 1945	S 60	0	0
2	K	1348	Total 10681	C 6802	N 1851	O 1967	S 61	0	0
2	L	1353	Total 10717	C 6823	N 1856	O 1977	S 61	0	0
2	M	1353	Total 10717	C 6823	N 1856	O 1977	S 61	0	0
2	N	1350	Total 10693	C 6809	N 1853	O 1970	S 61	0	0
2	O	1348	Total 10681	C 6802	N 1851	O 1967	S 61	0	0
2	P	1348	Total 10681	C 6802	N 1851	O 1967	S 61	0	0

- Molecule 3 is a protein called Small capsomere-interacting protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	Q	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	R	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	S	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	T	63	Total 513	C 321	N 97	O 91	S 4	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	U	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	V	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	W	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	X	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	Y	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	Z	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	a	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	b	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	c	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	d	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	e	63	Total 513	C 321	N 97	O 91	S 4	0	0
3	f	63	Total 513	C 321	N 97	O 91	S 4	0	0

- Molecule 4 is a protein called Triplex capsid protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	g	260	Total 2091	C 1344	N 365	O 371	S 11	0	0
4	j	290	Total 2325	C 1485	N 411	O 417	S 12	0	0
4	m	290	Total 2325	C 1485	N 411	O 417	S 12	0	0
4	p	290	Total 2325	C 1485	N 411	O 417	S 12	0	0
4	s	290	Total 2325	C 1485	N 411	O 417	S 12	0	0

- Molecule 5 is a protein called Triplex capsid protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	h	292	Total 2316	C 1490	N 399	O 409	S 18	0	0
5	i	285	Total 2258	C 1454	N 386	O 401	S 17	0	0
5	k	292	Total 2317	C 1491	N 399	O 408	S 19	0	0
5	l	303	Total 2406	C 1541	N 419	O 428	S 18	0	0
5	n	295	Total 2334	C 1501	N 402	O 412	S 19	0	0
5	o	291	Total 2311	C 1484	N 398	O 411	S 18	0	0
5	q	295	Total 2334	C 1501	N 402	O 412	S 19	0	0
5	r	304	Total 2411	C 1544	N 420	O 429	S 18	0	0
5	t	296	Total 2342	C 1505	N 403	O 415	S 19	0	0
5	u	304	Total 2411	C 1544	N 420	O 429	S 18	0	0

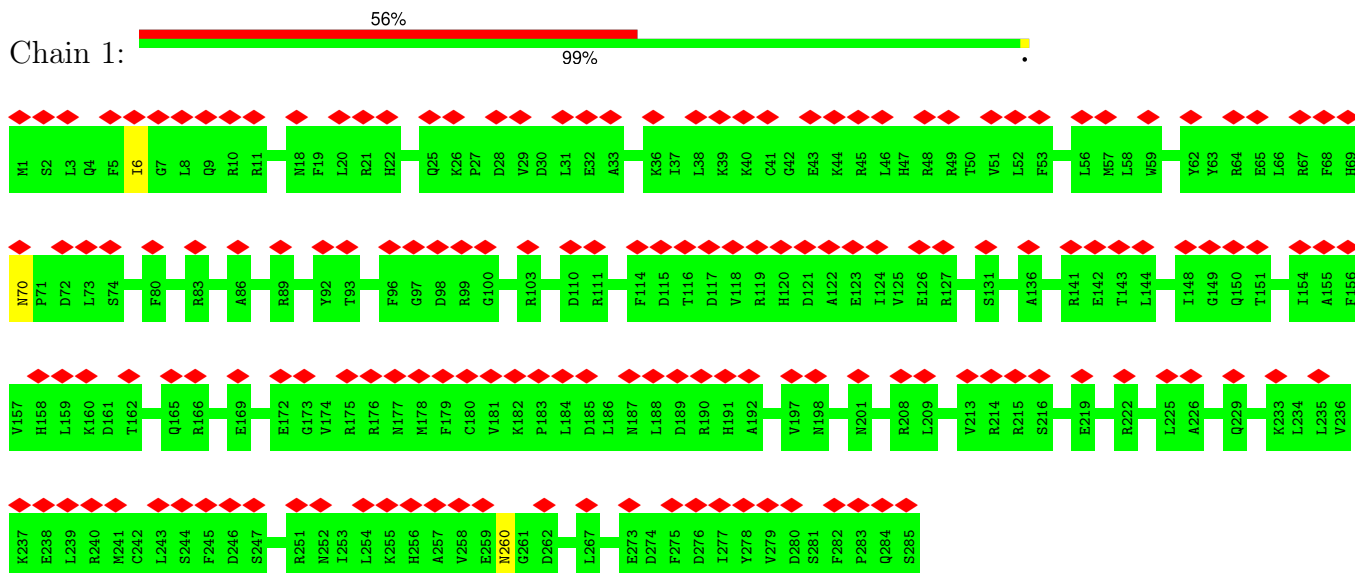
3 Residue-property plots [i](#)

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.

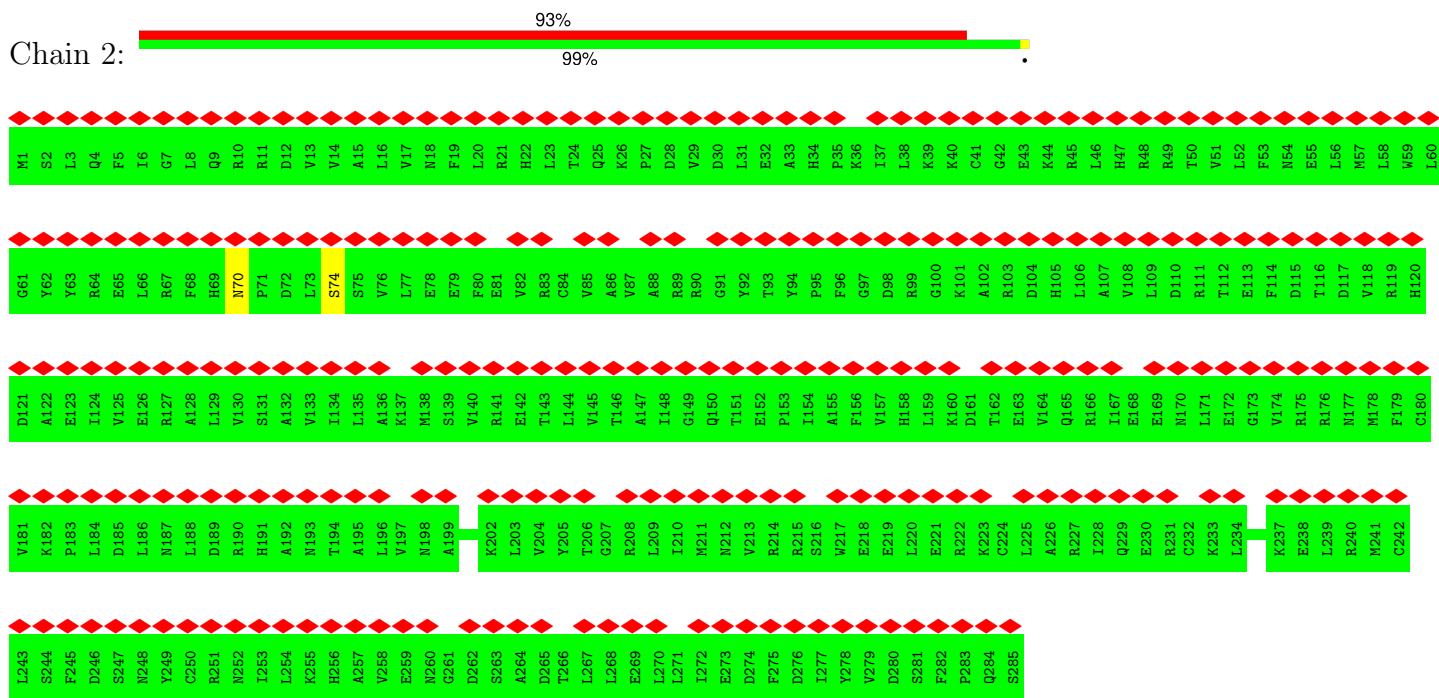
- Molecule 1: Tegument protein pp150



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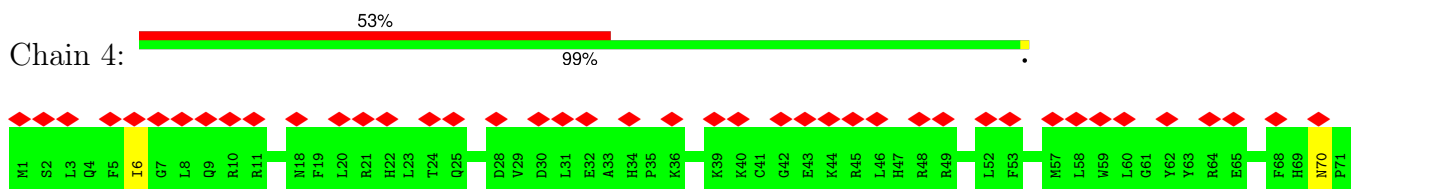
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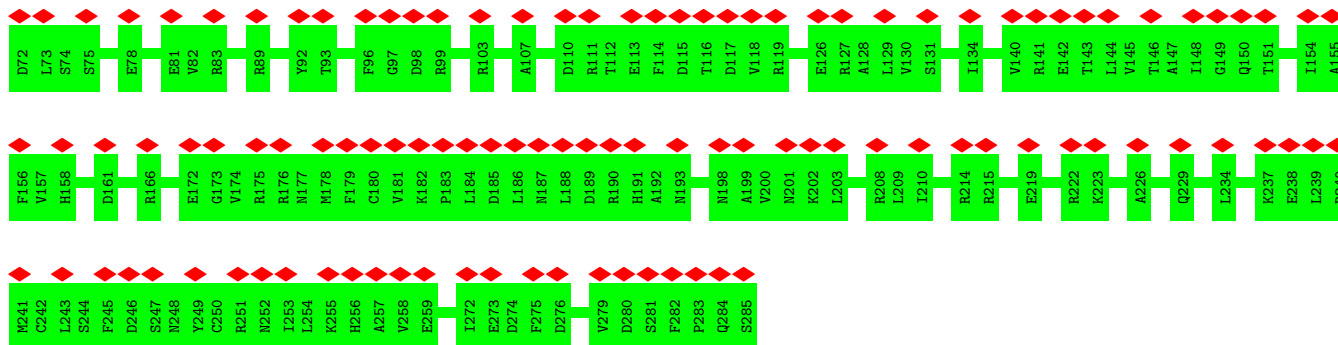


• Molecule 1: Tegument protein pp150

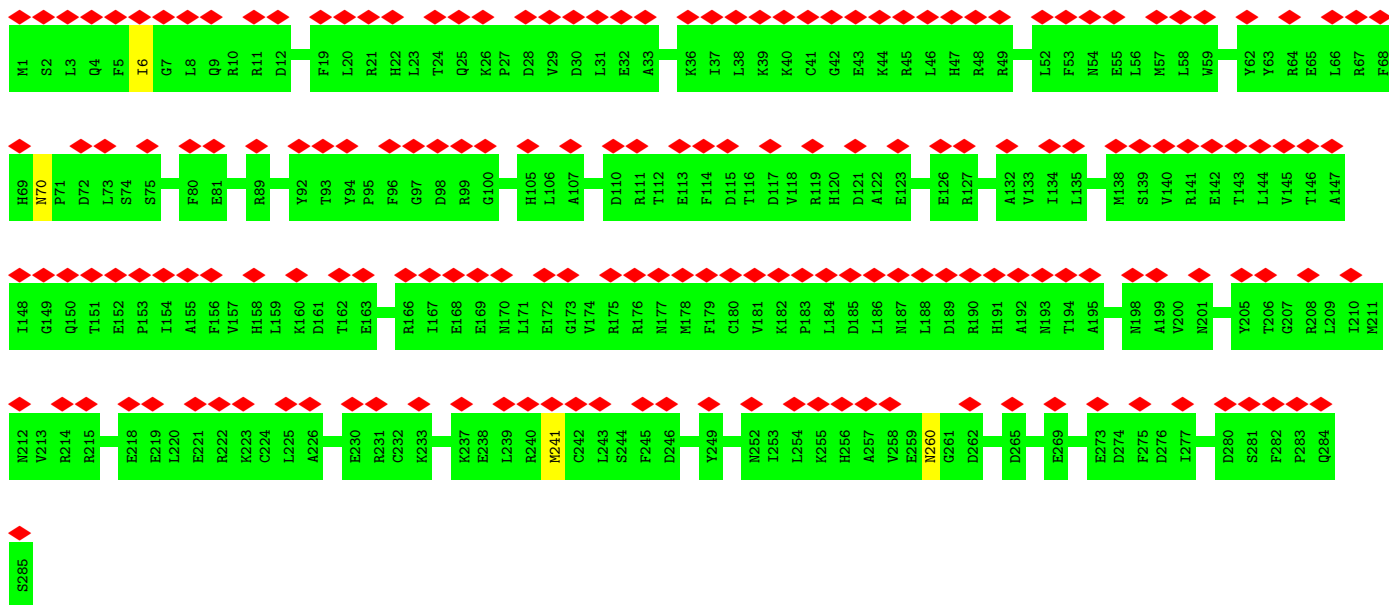


• Molecule 1: Tegument protein pp150

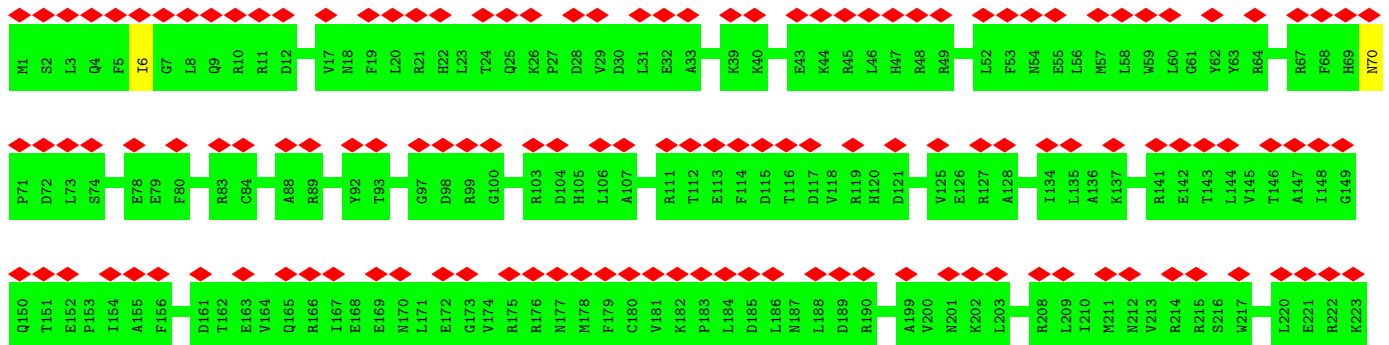


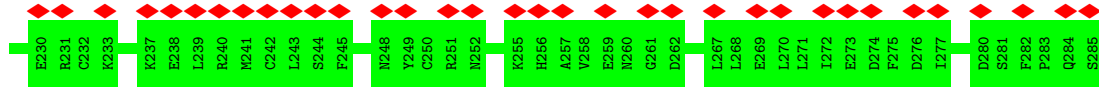


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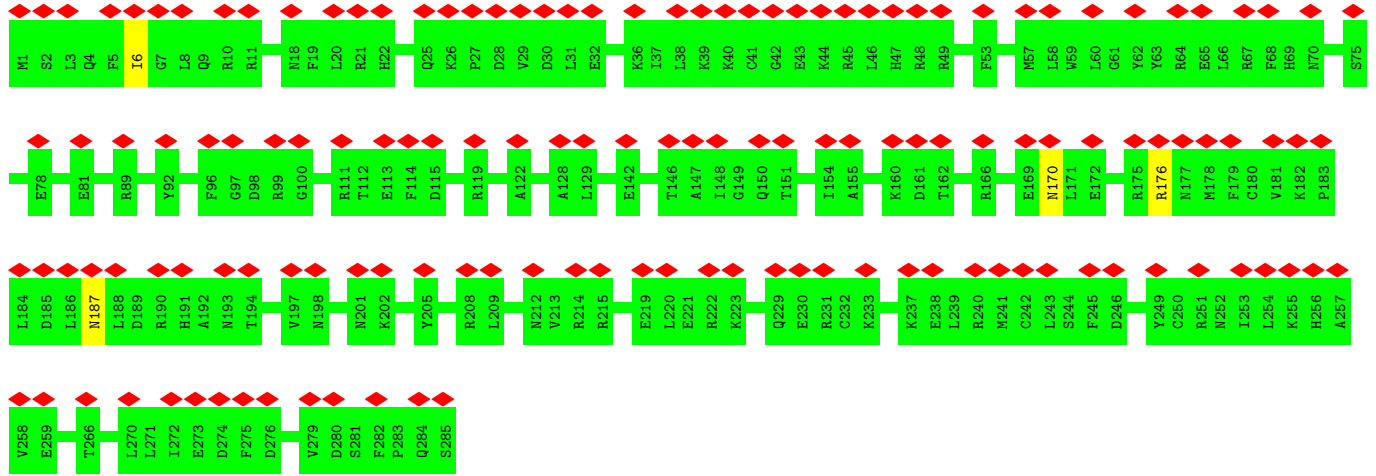


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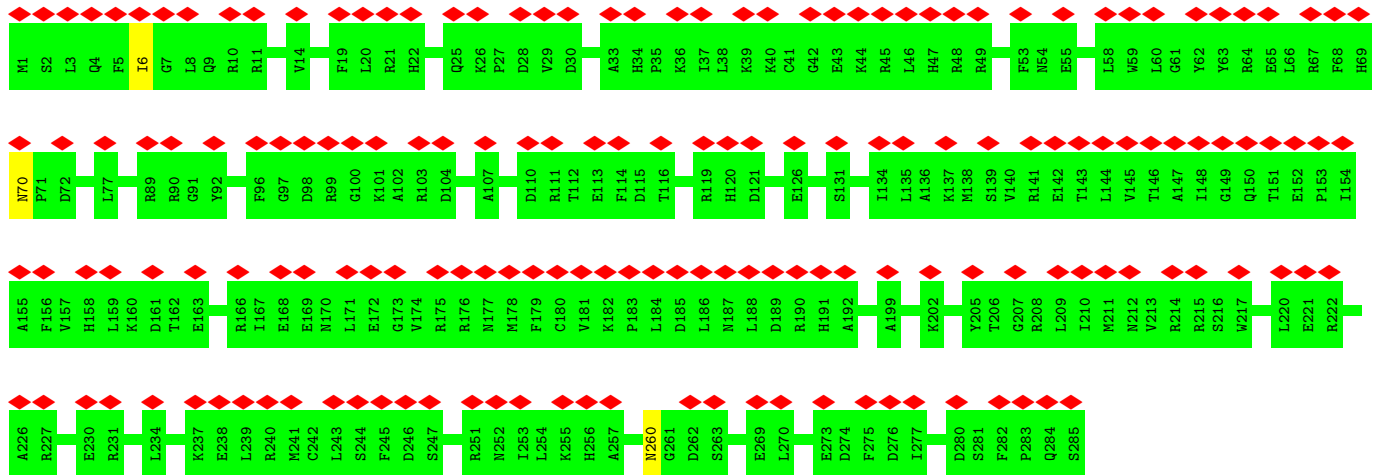




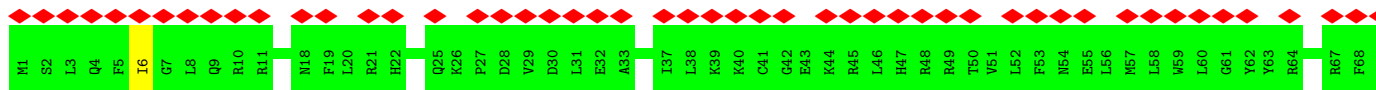
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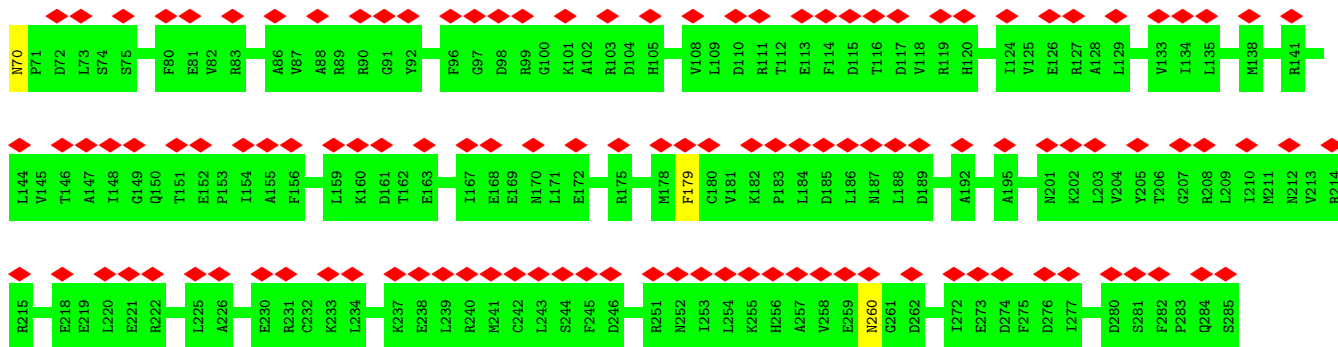


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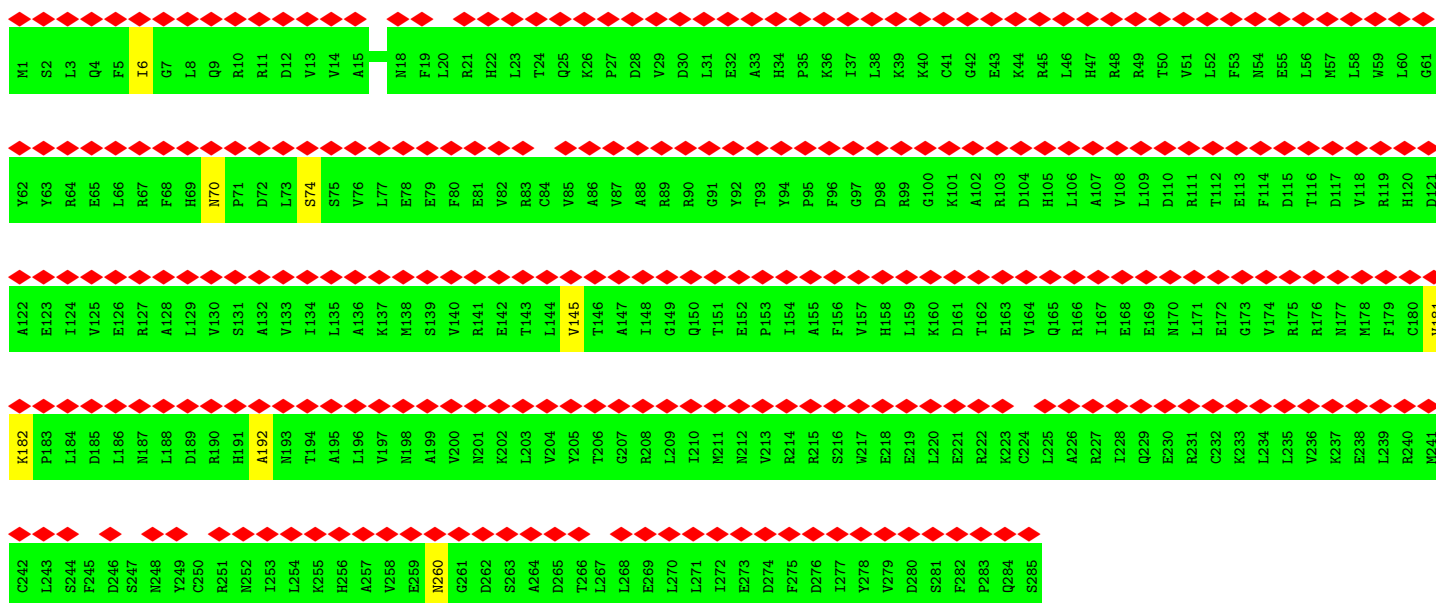


• Molecule 1: Tegument protein pp150

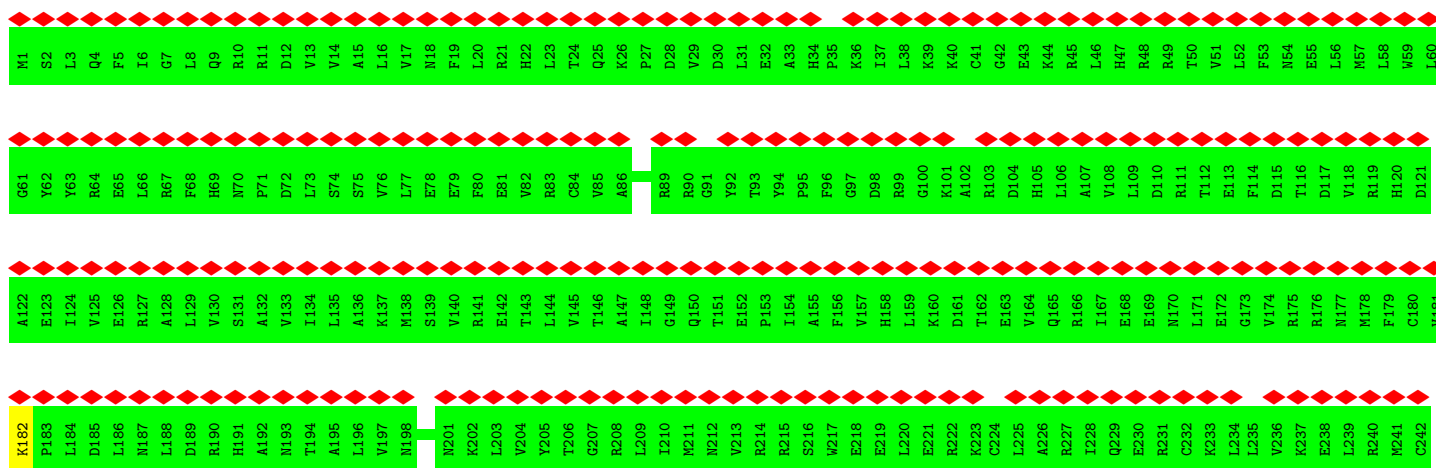


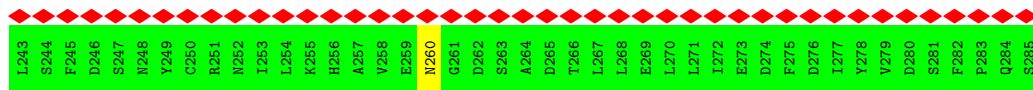


• Molecule 1: Tegument protein pp150

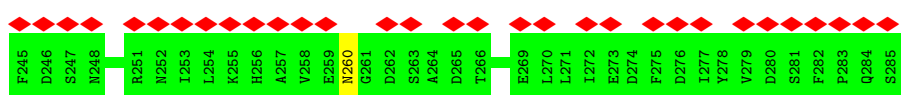
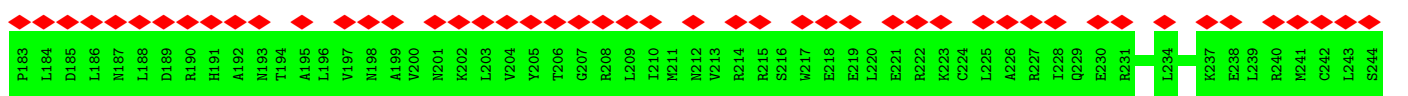
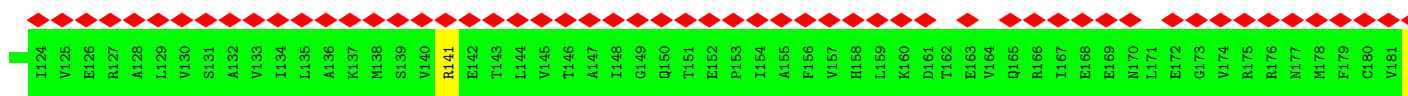
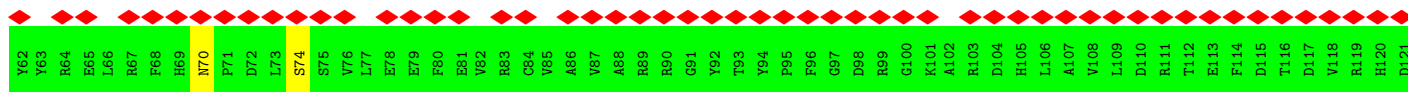
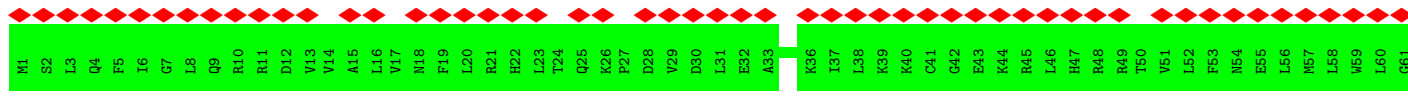


• Molecule 1: Tegument protein pp150

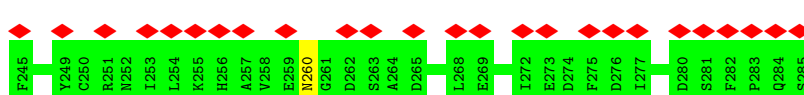
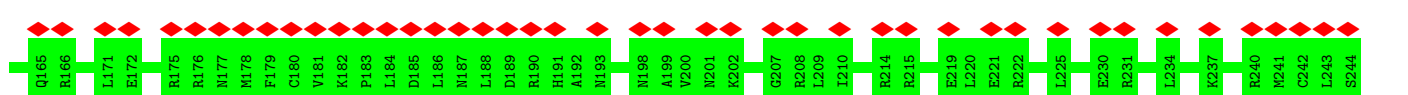
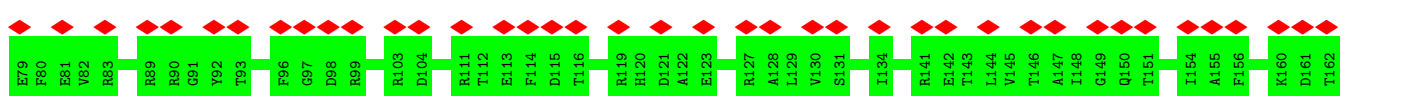
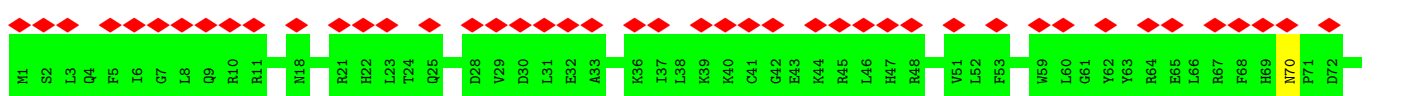




• Molecule 1: Tegument protein pp150



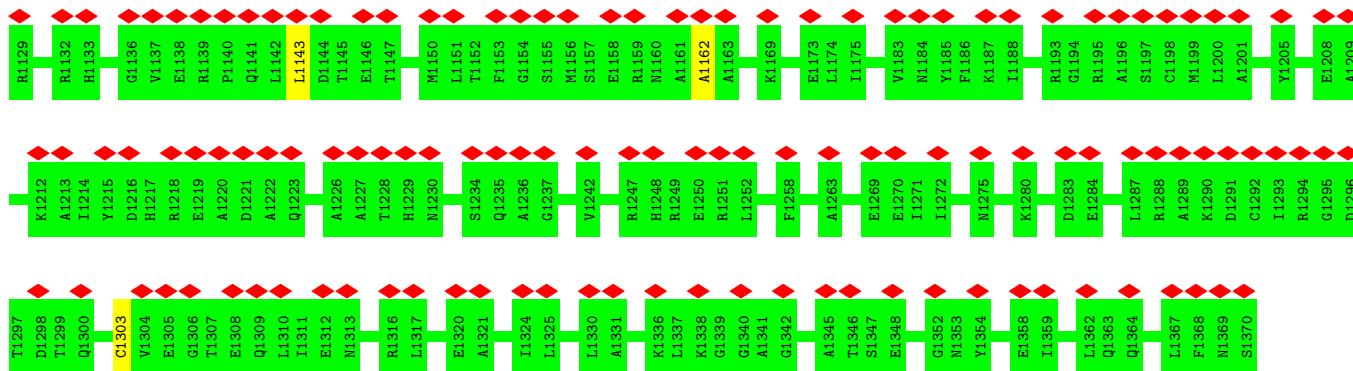
• Molecule 1: Tegument protein pp150



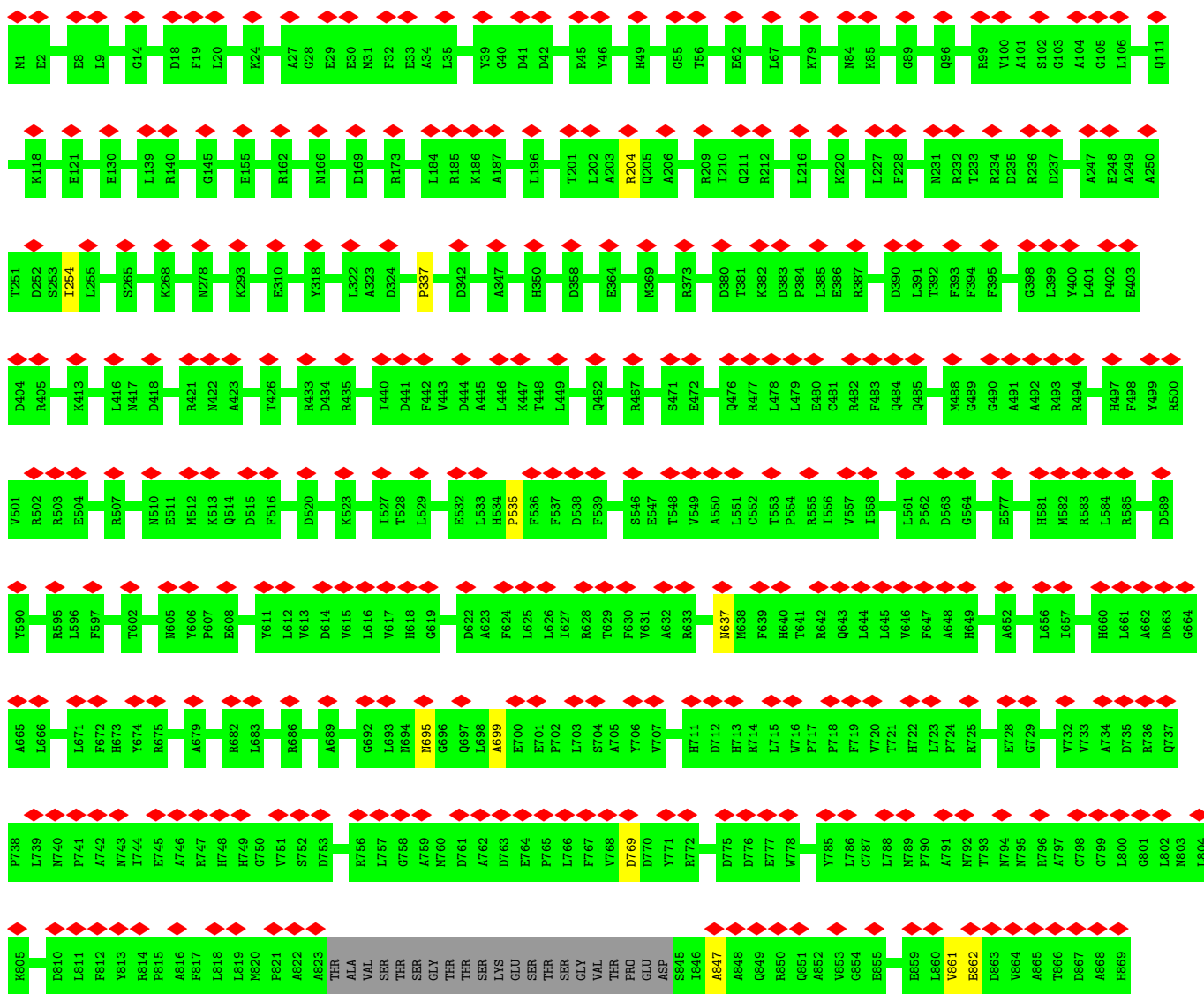
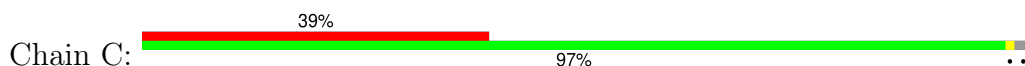
• Molecule 1: Tegument protein pp150

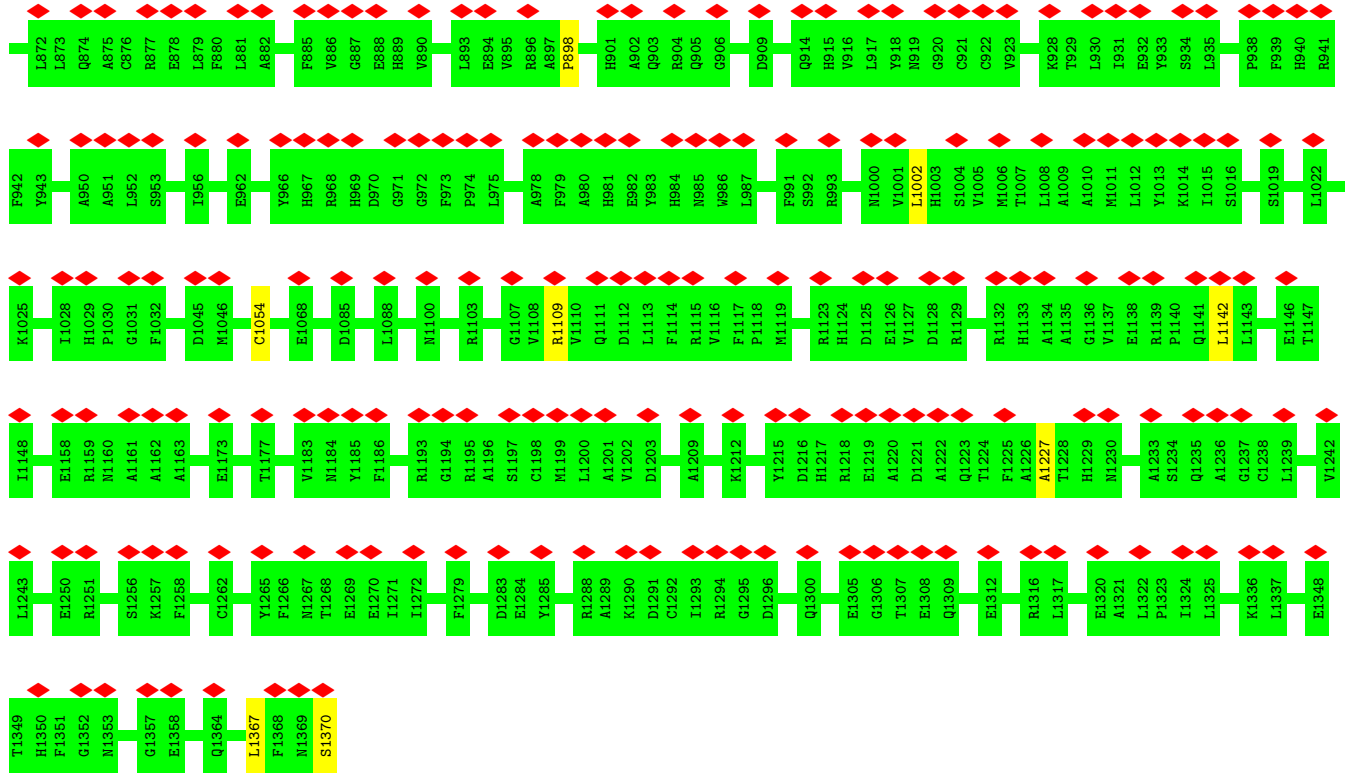


M1	L7	E8	L9	D18	F19	L20	T21	E30	M31	F32	R36	D41	D42	P43	E44	F54	G55	R60	L61	E62	W63	L67	G70	L71	A72	A75	H76	A77	F80	H81	D82	L83	N84	K85	L86	T87	T88	G89	K90	M91	L92	R99	V100	G103	A104	G105								
L106	P107	T108	S109	R110	Q111	M115	K121	K122	S123	R140	E141	T142	F143	E144	G145	I151	M171	S308	R173	R185	E186	E198	M199	A200	T201	I316	L202	A203	R204	Q205	A206	R212	S213	N214	I215	L216	Q217	K222	A225	T226	L227	F228	K90	M91	L92	R99	V100	G103	A104	G105				
R245	E248	D252	S253	T254	S265	C266	M284	S288	E294	T301	Y302	V306	L307	D380	S308	P309	E310	N311	A312	V313	T314	A315	I316	S317	Y318	H319	S320	I321	L322	A323	ASP	PHE	ASN	ASN	TTR	LYS	ALA	HIS	LEU	THR	SER	GLY	GLN	PRO	HIS	LEU	PRO	ASN	D342	S343	L344			
S345	Q346	A347	G348	A349	H350	S351	L352	D358	V359	I360	R361	E364	N371	L372	R373	N378	T379	D380	T381	K382	E383	P384	L385	D390	L391	T392	F393	F394	F395	G398	L399	E403	D404	R405	E411	S412	K413	V414	K415	L416	N417	R503	D418	R421	N422	A423	L424	P425	T426	R433				
D434	R435	A436	K439	D444	A445	L446	K447	T448	L449	V453	L454	H455	E456	F464	T465	E466	R467	S471	R477	L478	L479	E480	C481	R482	F483	Q484	Q485	E486	P487	M488	G489	A492	R493	R494	H497	F498	Y499	R500	V501	R502	R503	E504	R507	T508	V509	N510	E511	M512	K513	Q514				
D515	V518	F521	Y522	K523	T531	E532	L533	H534	F535	F536	F537	D538	F539	T540	H541	S546	A550	L551	C552	R555	L556	V557	L558	G559	N560	D563	G564	L565	A566	F567	F570	H571	E572	L573	R574	L578	M579	E580	H581	M582	R583	D589	Y590	E591	E592	R595	L596	F597						
K598	F604	N605	P607	E608	L609	C610	Y611	L612	V613	D614	V615	L616	V617	H618	G619	N620	V621	F624	L625	R628	T629	A632	R633	C634	L635	H640	T641	R642	Q643	L644	V646	F647	A648	S650	Y651	A652	T655	A658	E659	H660	L661	A662	D663	G664	A665	D669	L670							
L671	V674	R675	A679	R682	L683	R686	L687	S688	A689	L690	P691	G692	L693	H694	N695	G696	G697	A699	E700	E701	P702	L703	A705	Y706	V707	N708	A709	L710	H711	D712	H713	R714	L715	F716	F719	V720	T721	H722	R725	N726	H727	G729	V730	Q731	V732	V733	A734	D735	R736	Q737				
F738	L739	M740	N743	T744	E745	R747	H748	H749	G750	V751	S752	D753	R756	L757	G758	A759	M760	A762	D763	E764	F765	L766	F767	V768	D769	H901	A902	Q903	S845	T846	A847	A848	Q849	R850	Q851	V853	G854	E855	M856	L857	T858	E859	L860	V861	E862	D863	V864	T866	D867	A868				
H869	T870	R871	L872	L873	Q874	A875	C876	R877	E878	L879	F880	L881	A882	A883	Q884	F885	V886	G887	E888	R891	V892	L893	E894	V895	R896	L899	D900	H901	A902	Q903	G906	D909	Q914	H915	V916	L917	Y918	N919	G920	C921	C922	A926	P927	K928	T929	L930	I931	E932	G801	Y933	S934	L935	P936	V937
P938	F939	H940	R941	F942	Y943	S944	T947	A950	A951	L952	S953	R958	Y959	E962	F963	Y966	H967	R968	H969	D970	G971	G972	F973	P974	L975	A978	F979	A980	H981	N985	W986	L987	R988	F991	S992	R993	A996	P999	M1000	V1001	L1002	H1003	S1004	V1005	M1006	T1007	L1008	A1009	A1010					
M1011	L1012	Y1013	K1014	I1015	S1016	P1017	V1018	K1025	A1026	H1027	A1028	H1029	P1030	G1031	F1032	A1033	L1034	E1043	V1044	D1045	C1054	I1063	K1066	E1067	E1068	R1069	D1070	D1085	M1086	G1087	L1088	G1089	R1101	V1102	R1103	M1106	R1109	V1110	Q1111	D1112	L1113	F1114	R1115	M1119	R1123	E1126								

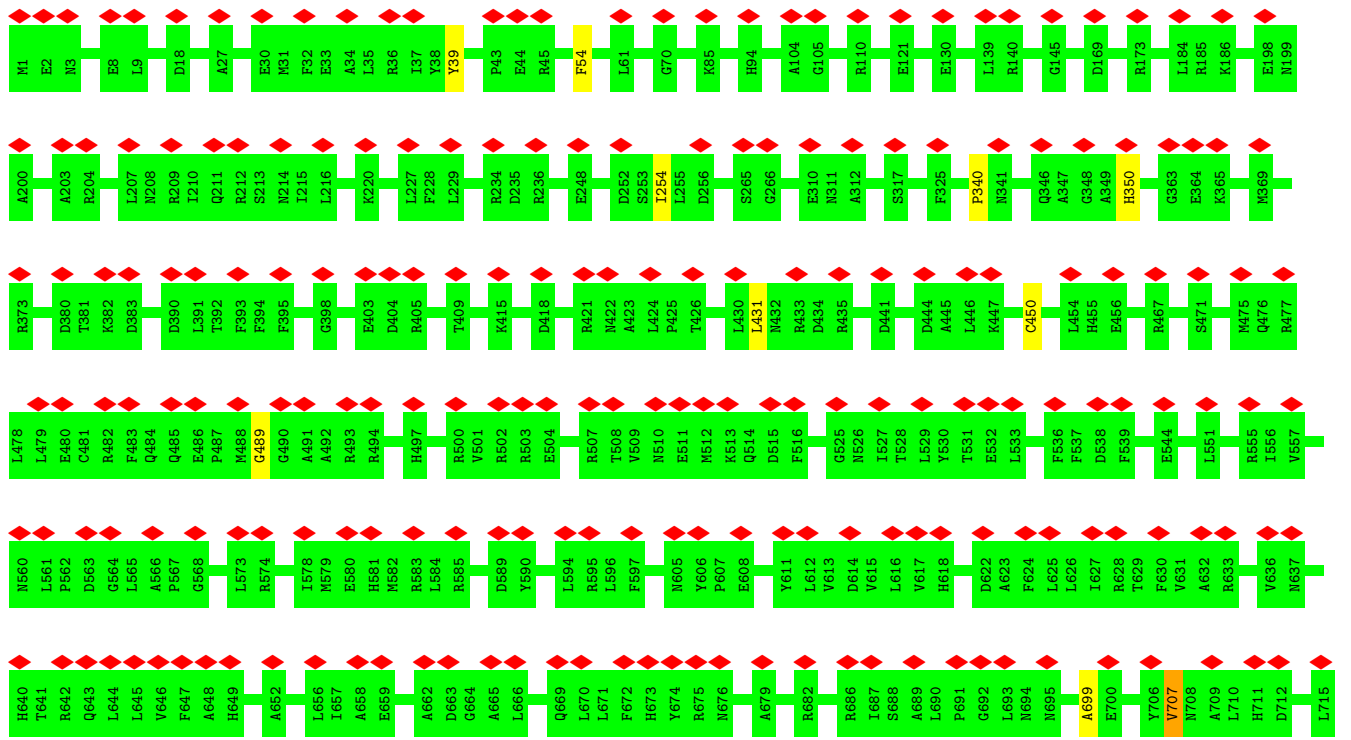


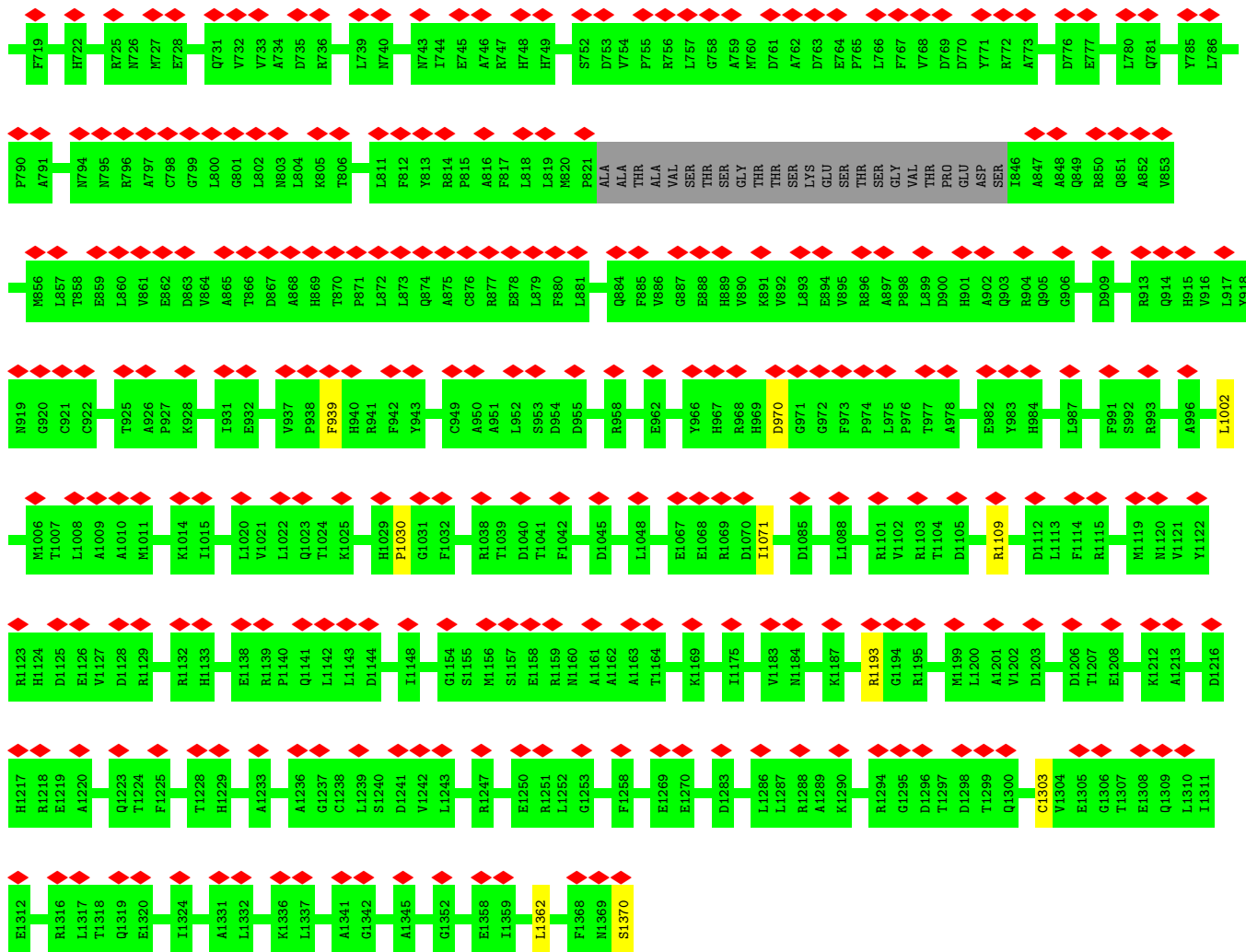
• Molecule 2: Major capsid protein



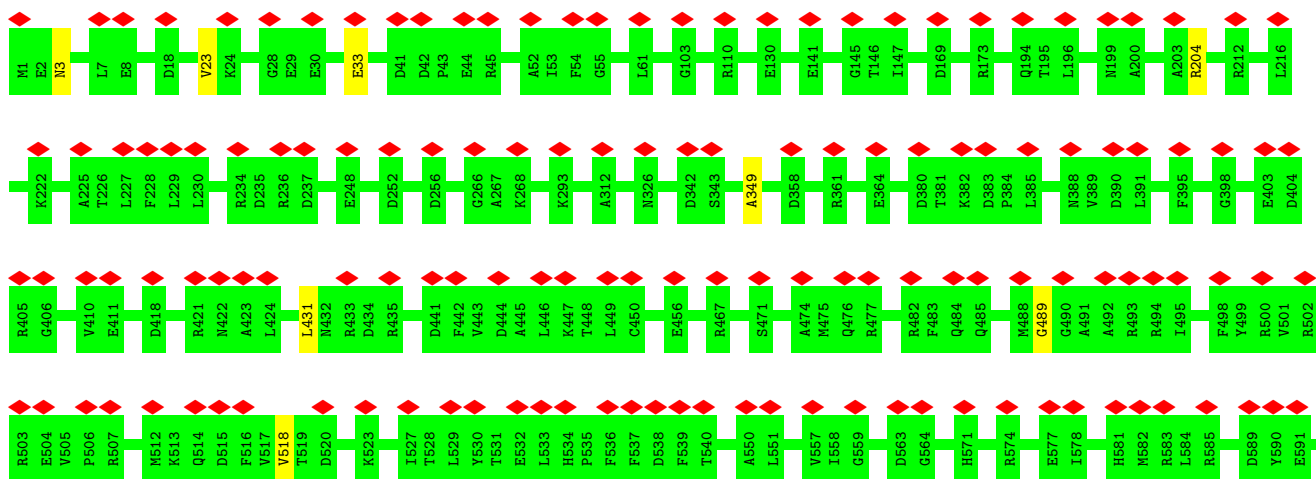


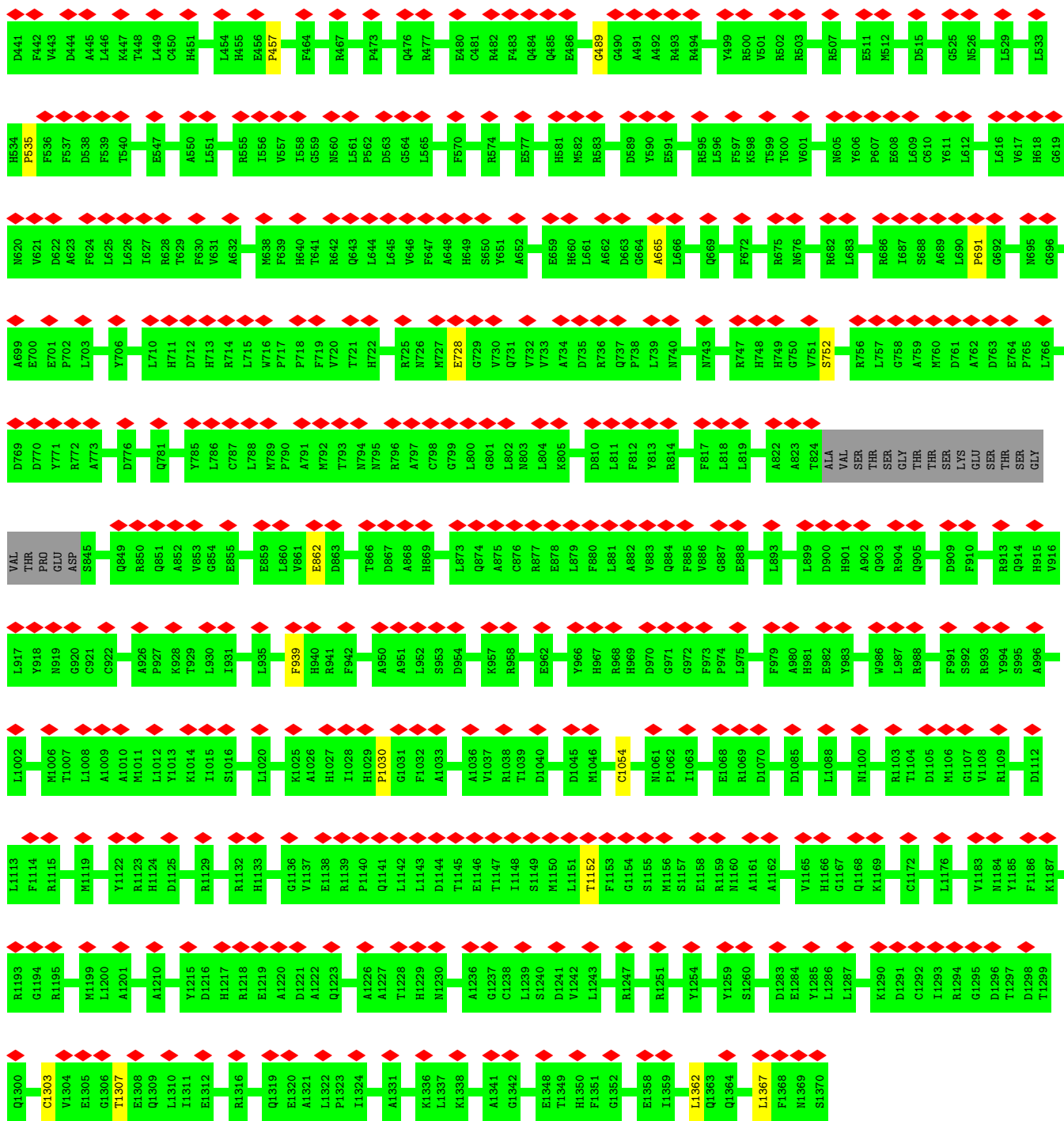
- Molecule 2: Major capsid protein



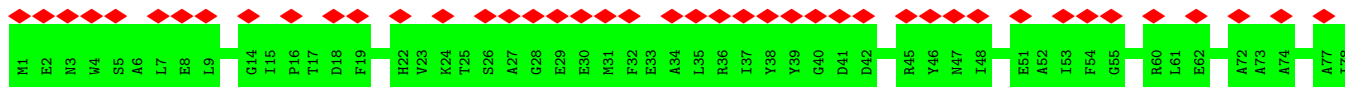


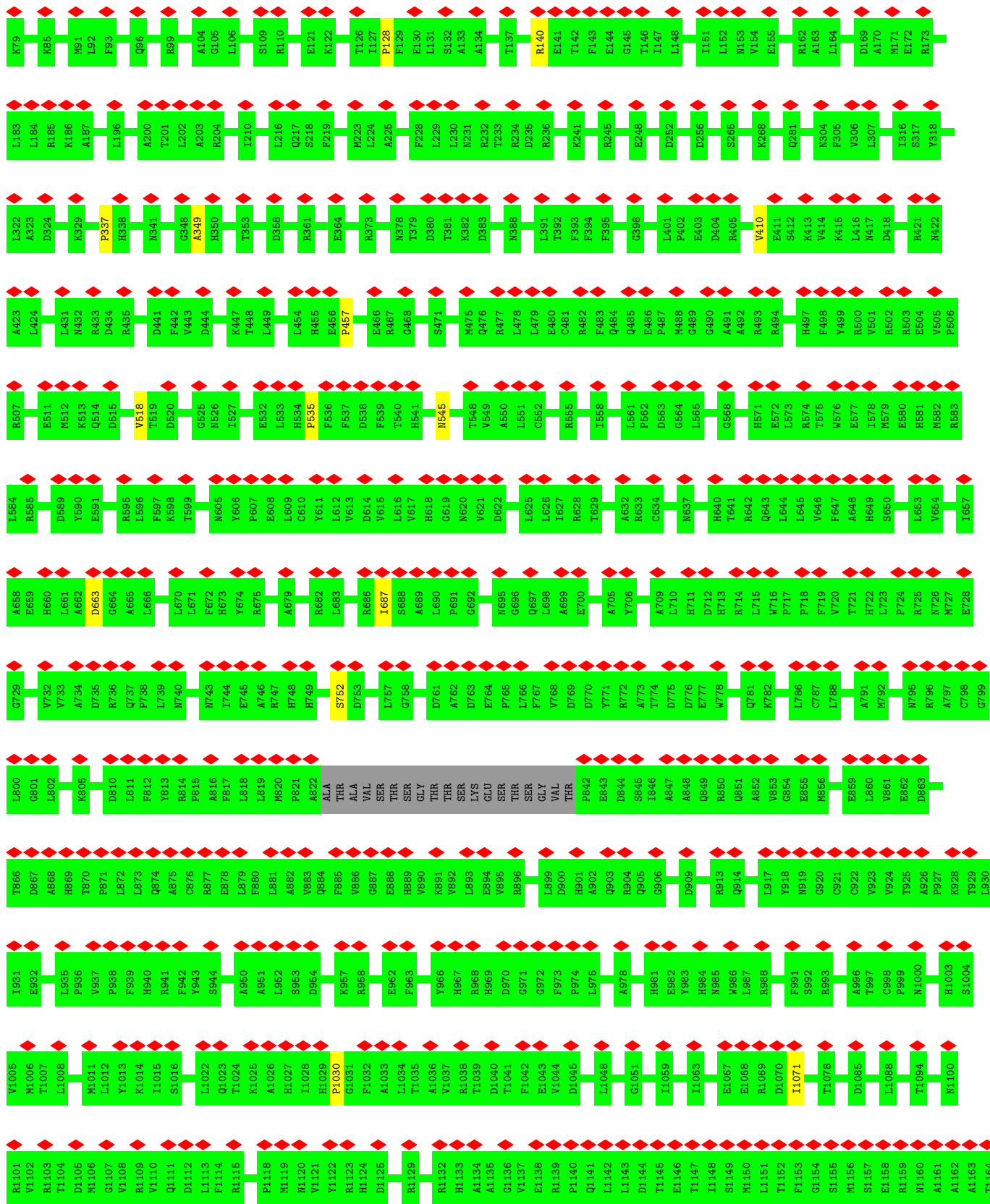
• Molecule 2: Major capsid protein

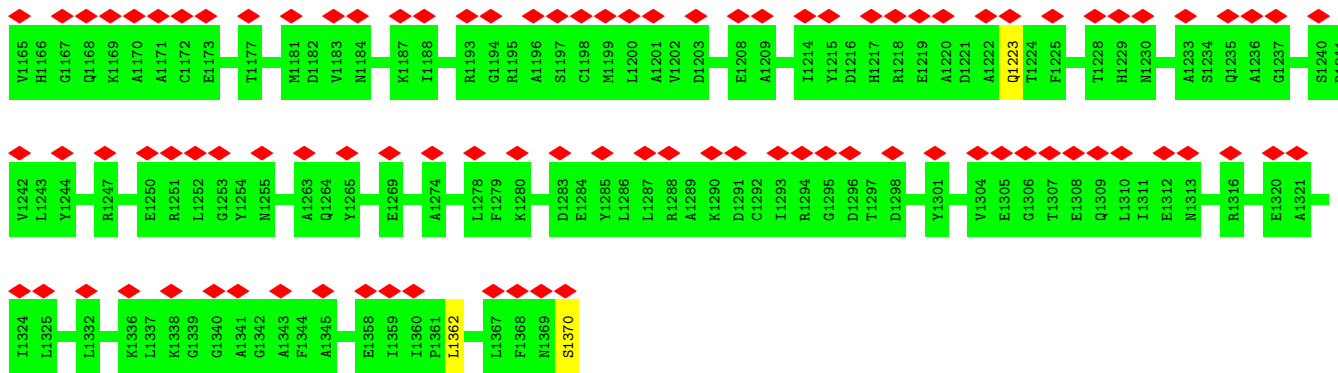




• Molecule 2: Major capsid protein

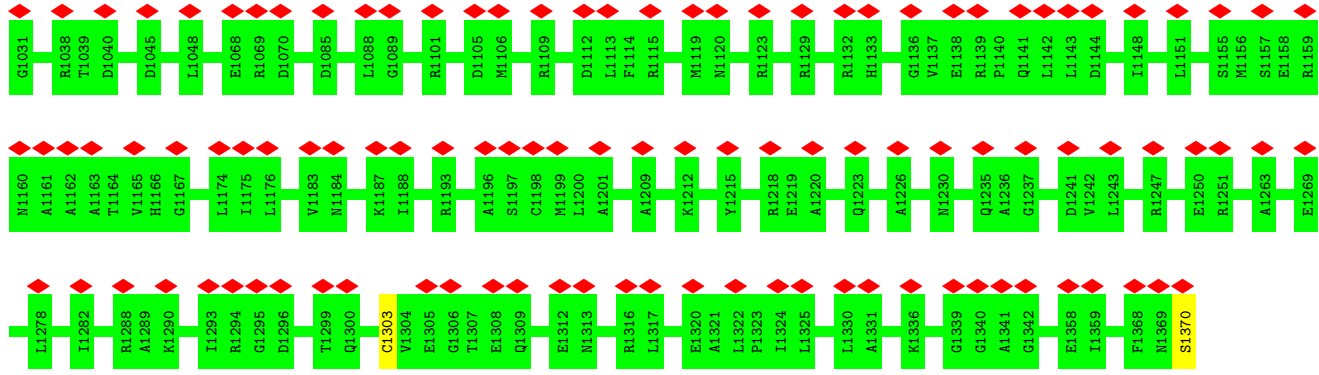






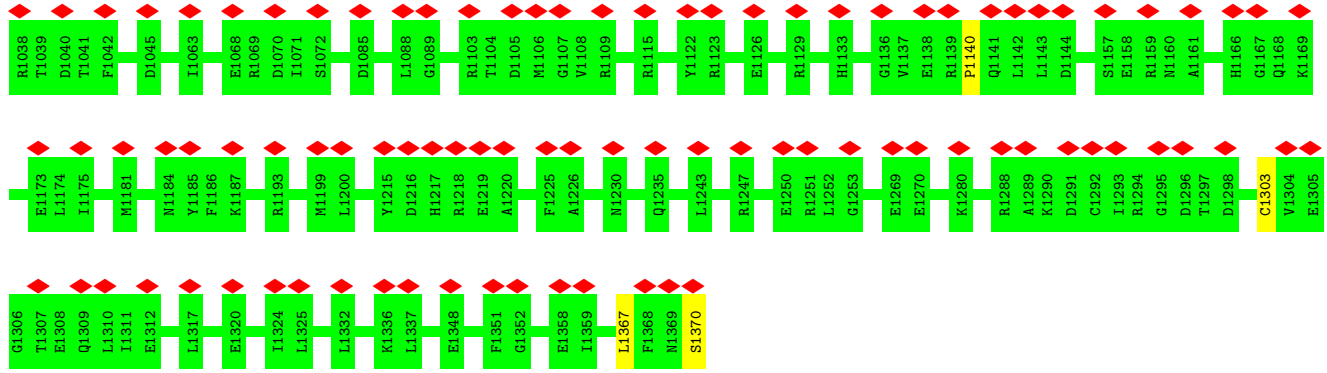
• Molecule 2: Major capsid protein



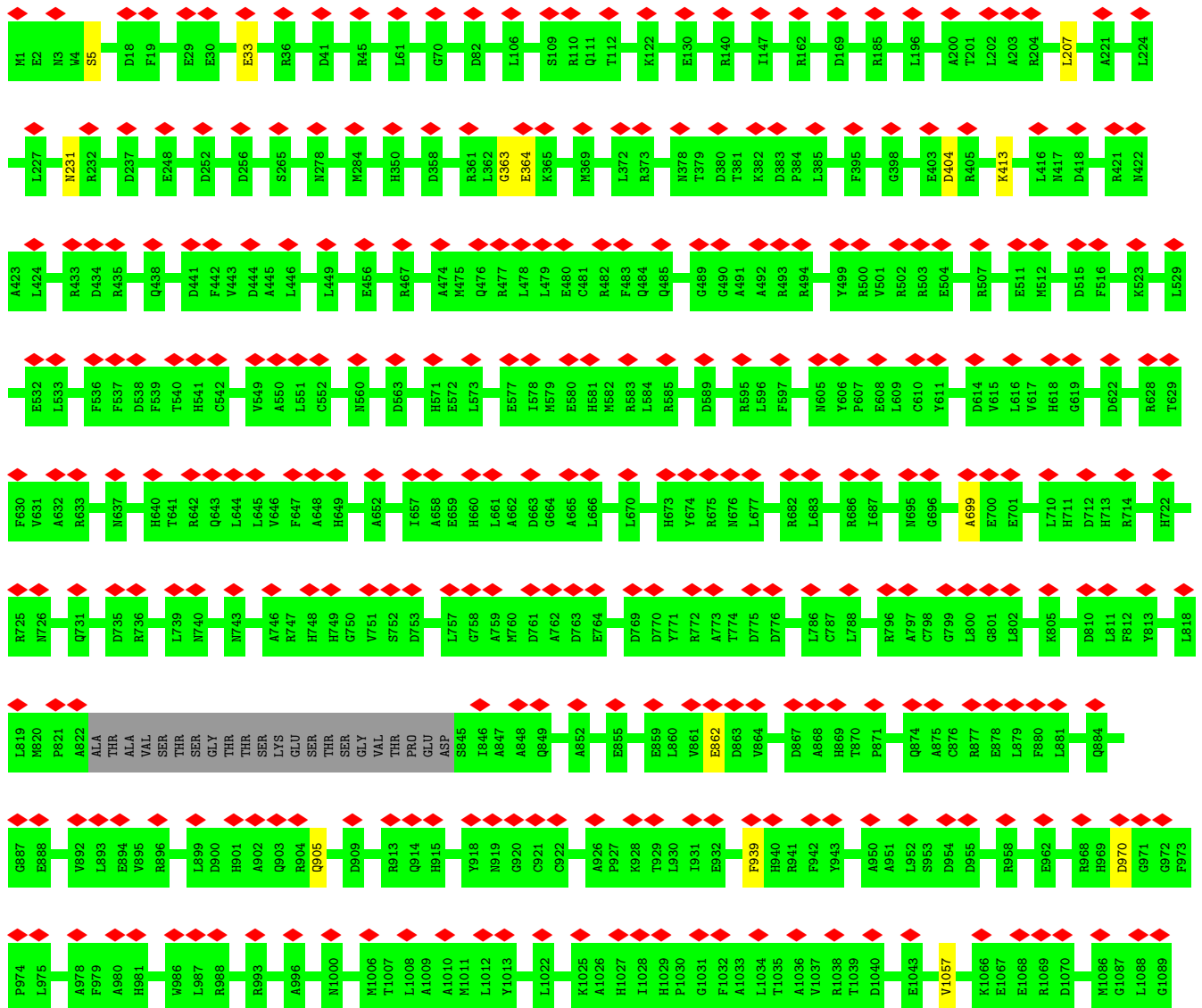


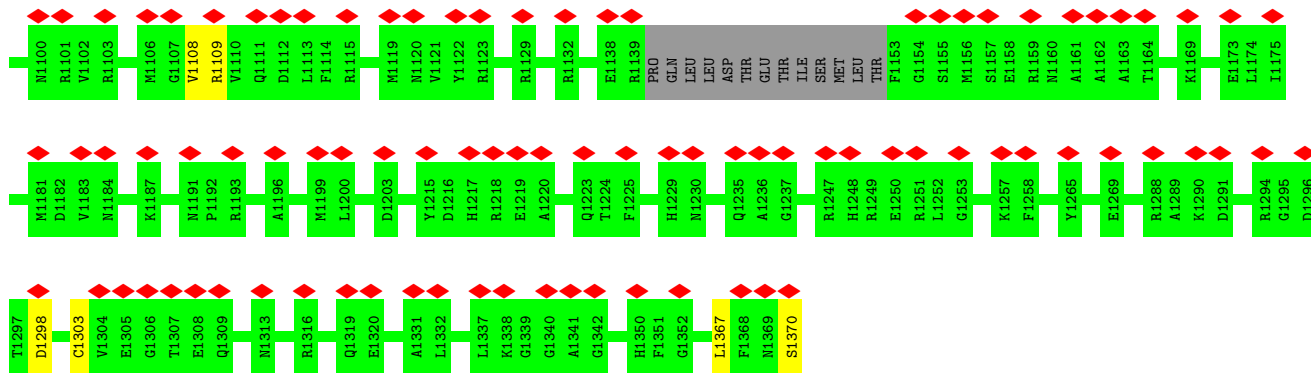
• Molecule 2: Major capsid protein



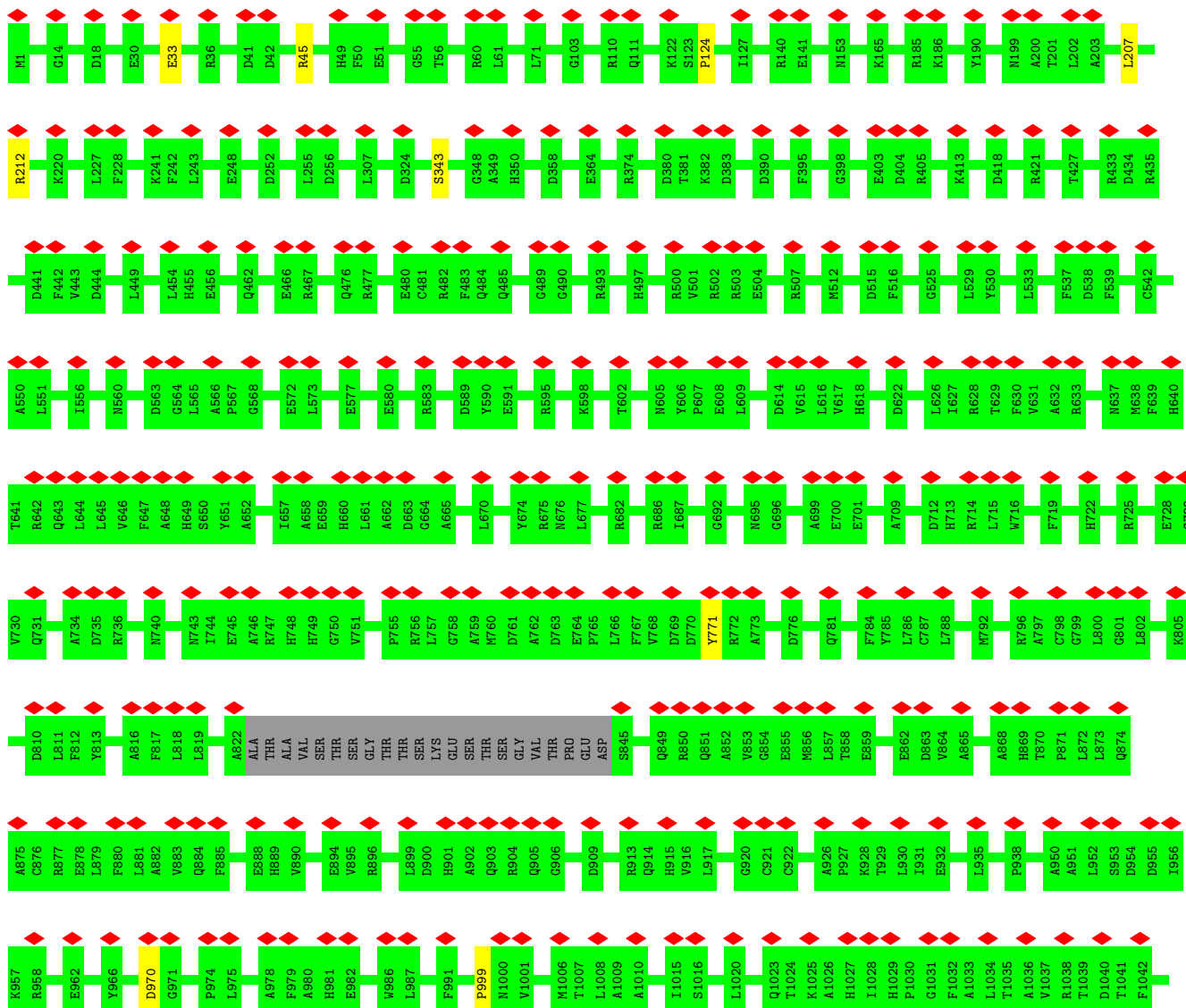


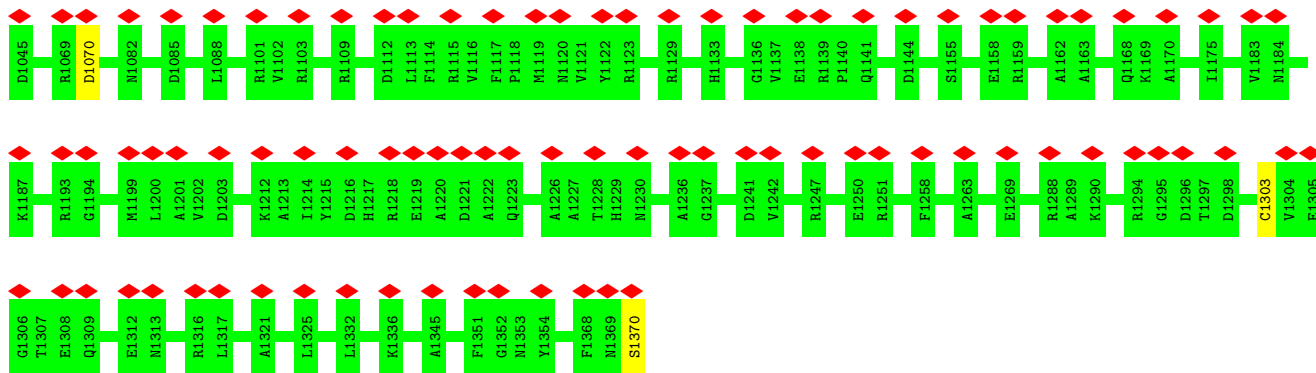
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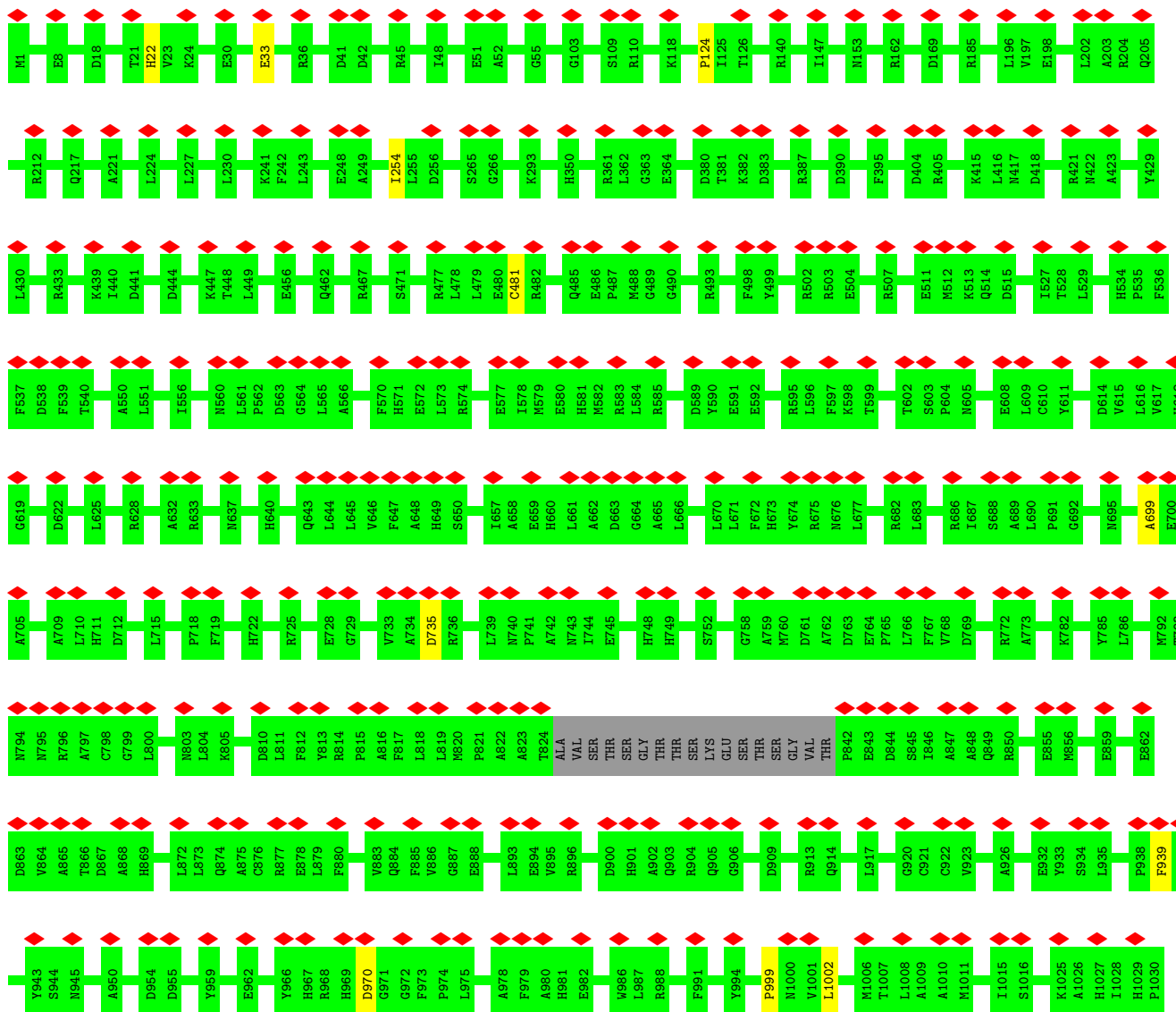


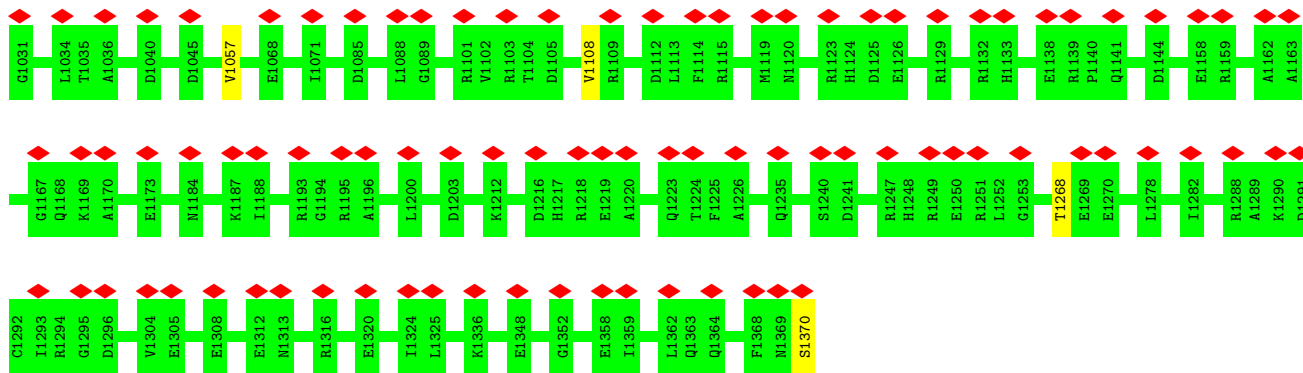
• Molecule 2: Major capsid protein





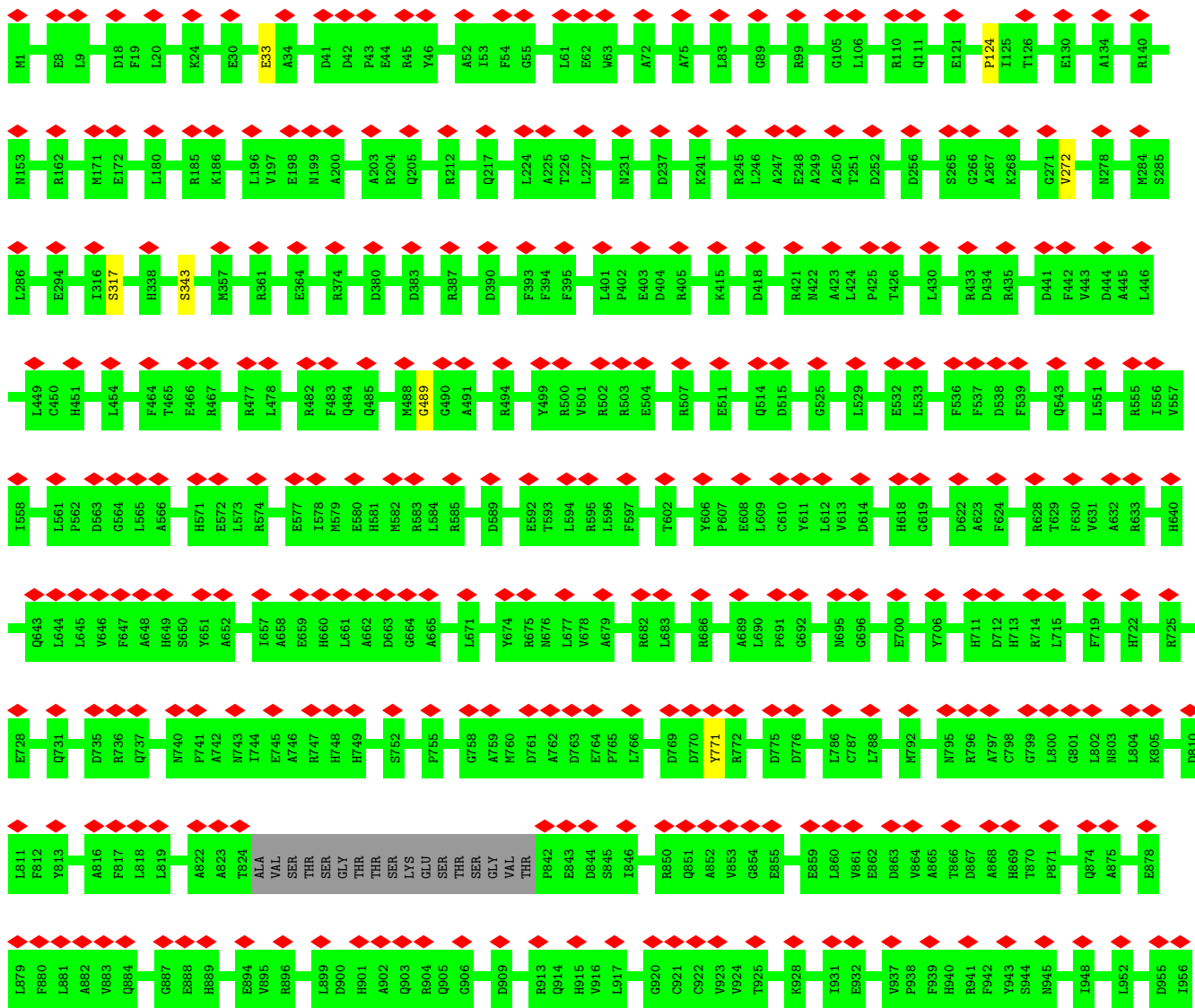
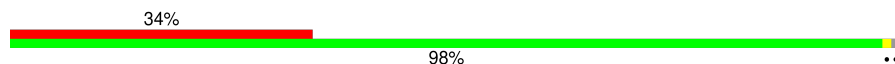
• Molecule 2: Major capsid protein

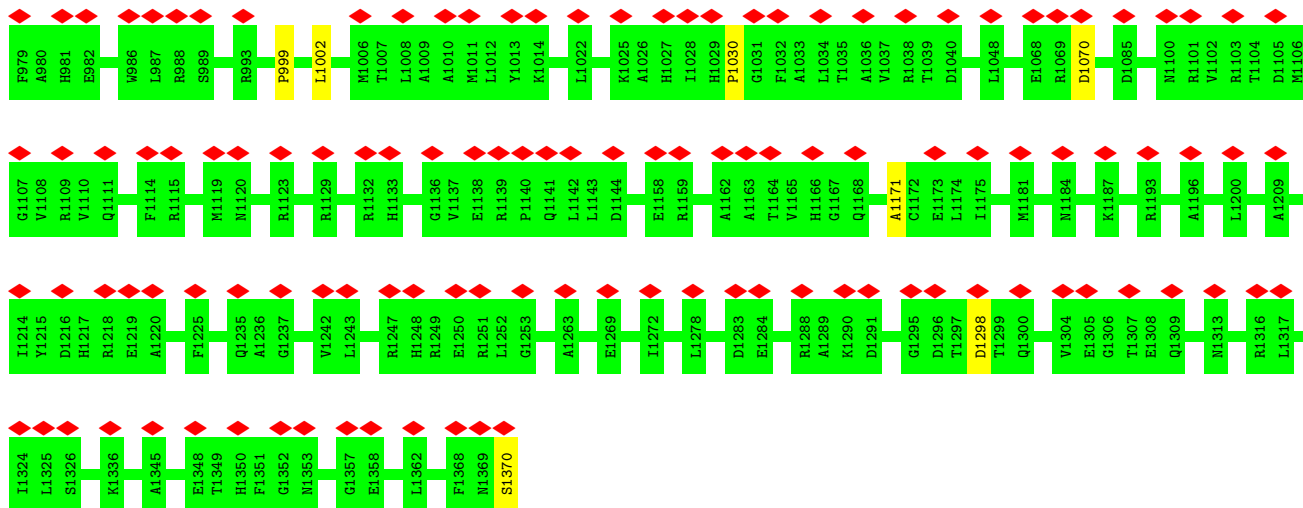




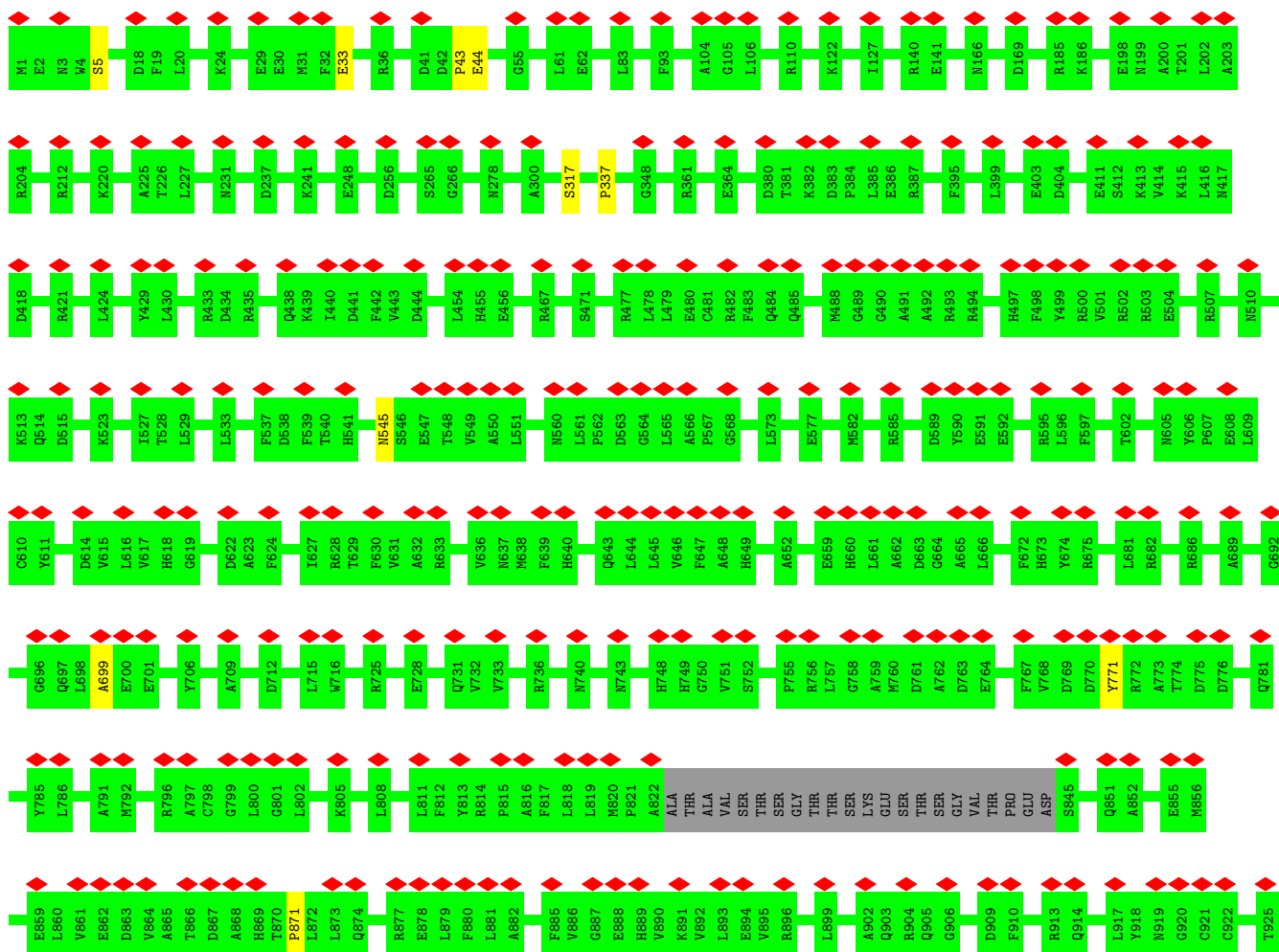
• Molecule 2: Major capsid protein

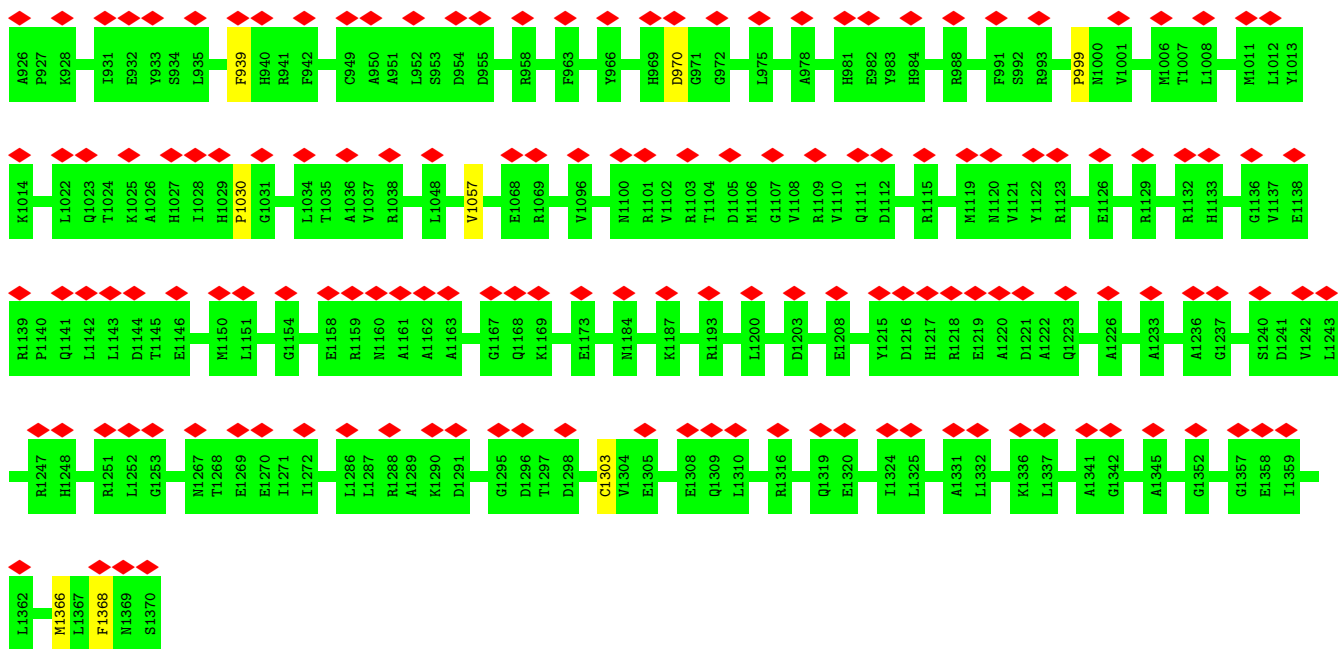
Chain M:



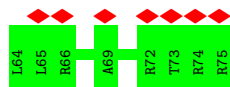
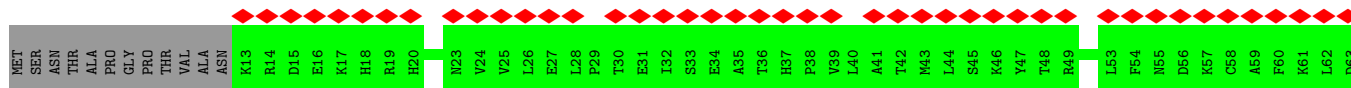
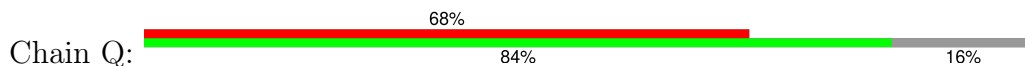


• Molecule 2: Major capsid protein

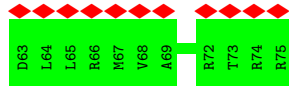
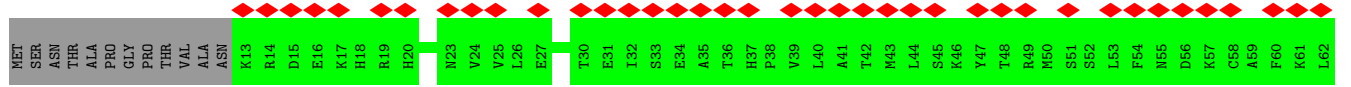
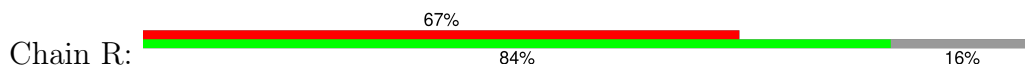




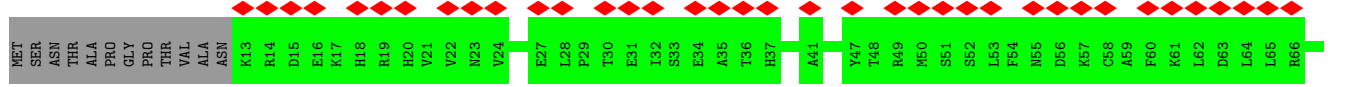
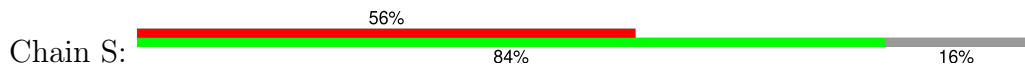
• Molecule 3: Small capsomere-interacting protein

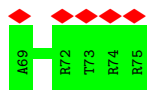


• Molecule 3: Small capsomere-interacting protein

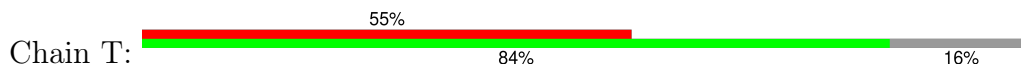


• Molecule 3: Small capsomere-interacting protein

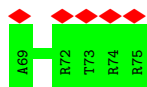
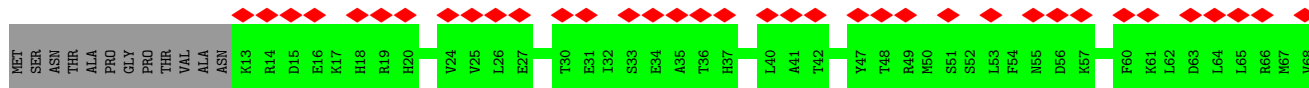




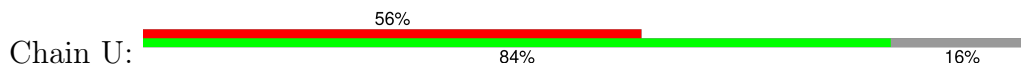
• Molecule 3: Small capsomere-interacting protein



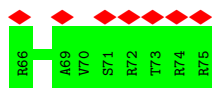
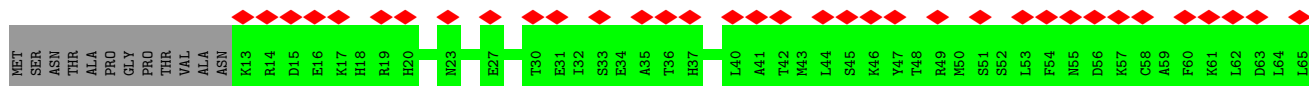
Chain T:



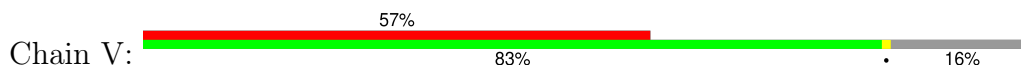
• Molecule 3: Small capsomere-interacting protein



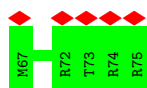
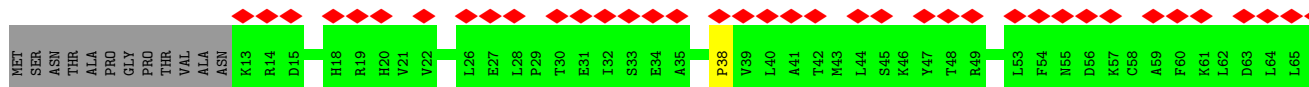
Chain U:



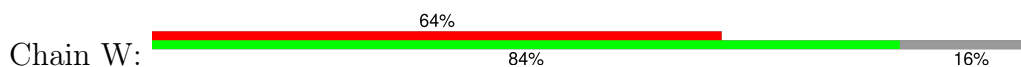
• Molecule 3: Small capsomere-interacting protein



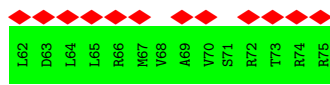
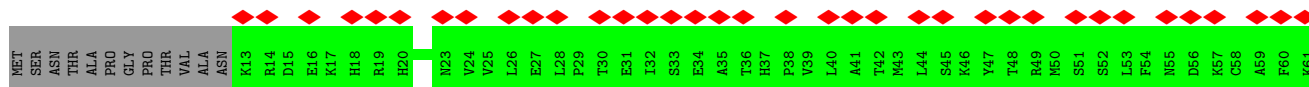
Chain V:



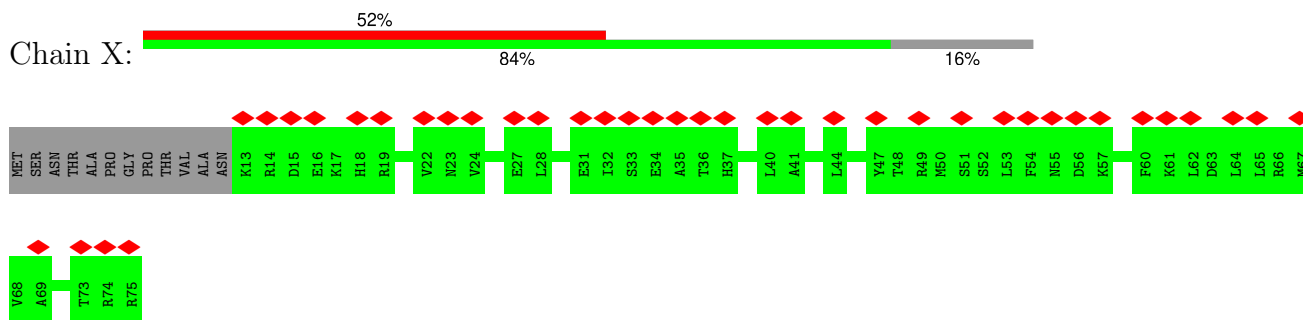
• Molecule 3: Small capsomere-interacting protein



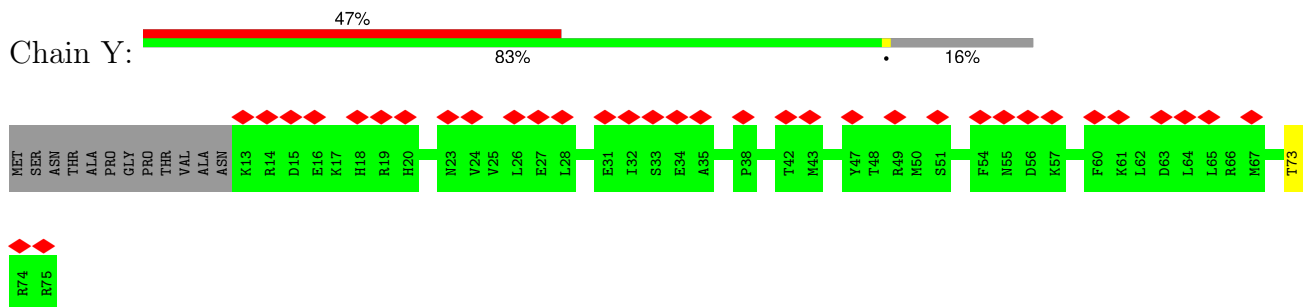
Chain W:



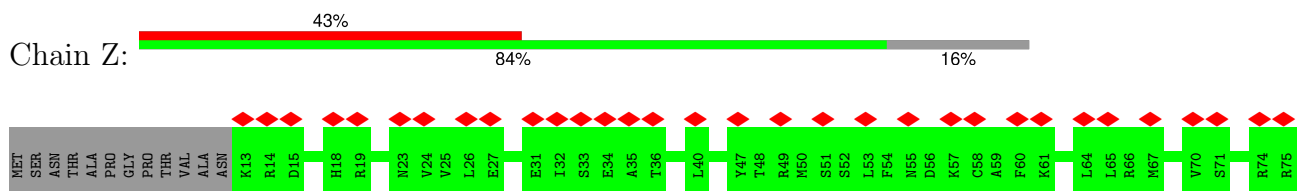
• Molecule 3: Small capsomere-interacting protein



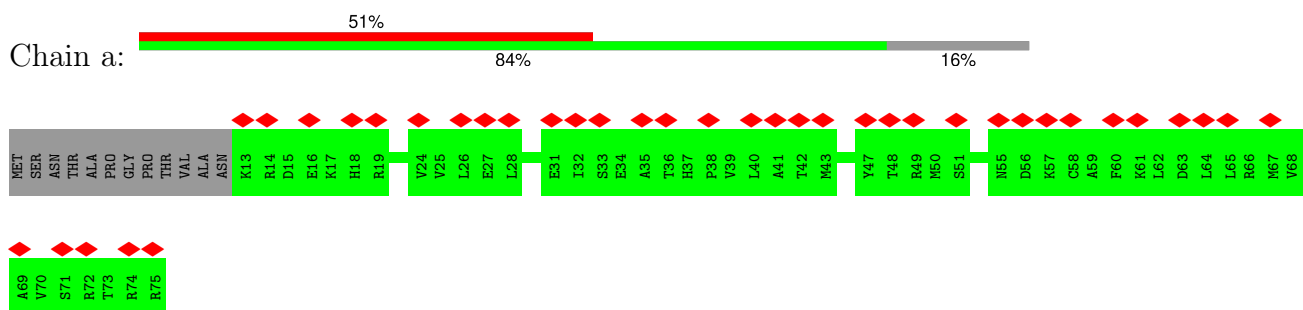
• Molecule 3: Small capsomere-interacting protein



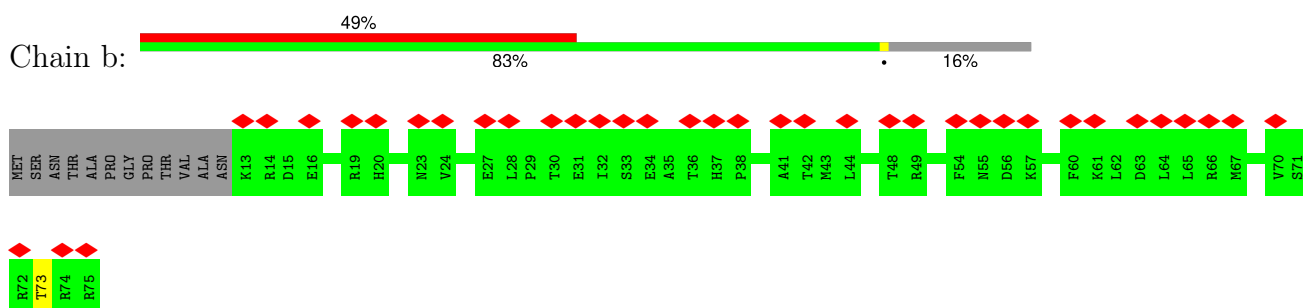
• Molecule 3: Small capsomere-interacting protein

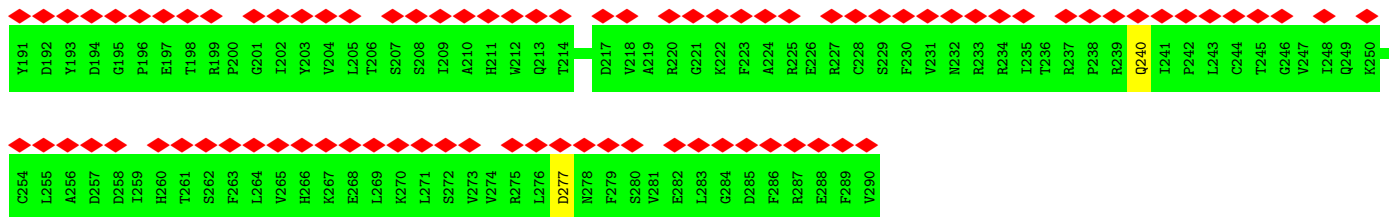


• Molecule 3: Small capsomere-interacting protein

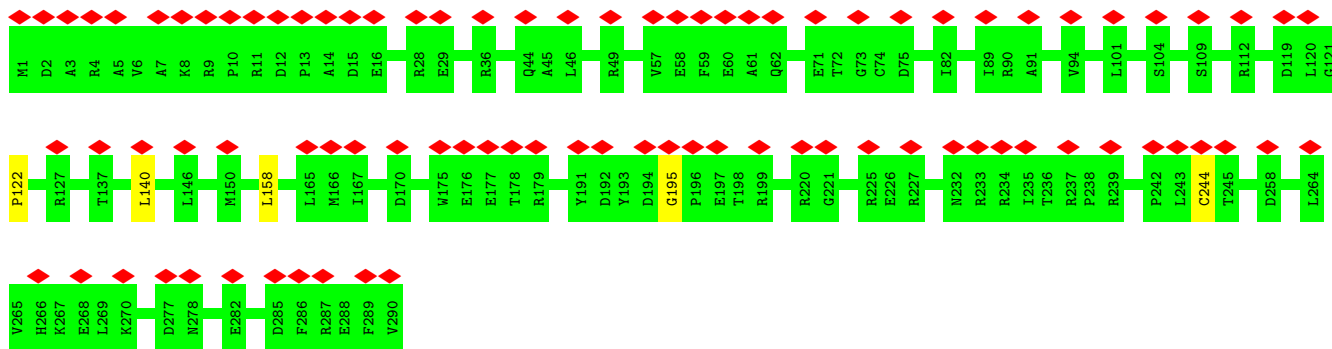


• Molecule 3: Small capsomere-interacting protein

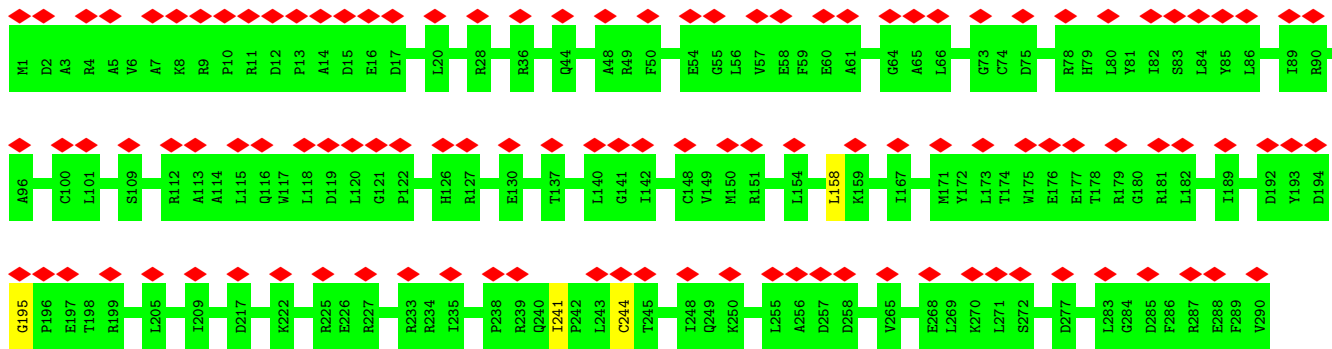
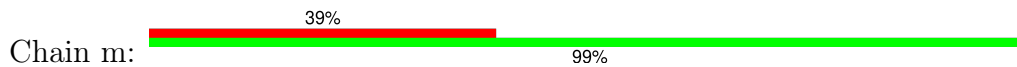




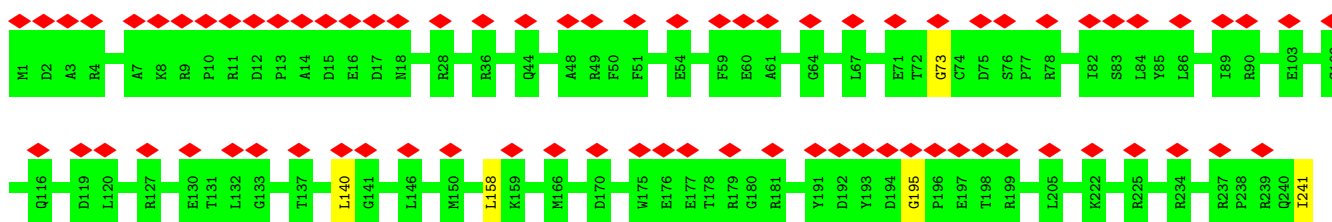
• Molecule 4: Triplex capsid protein 1

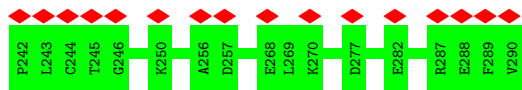


• Molecule 4: Triplex capsid protein 1

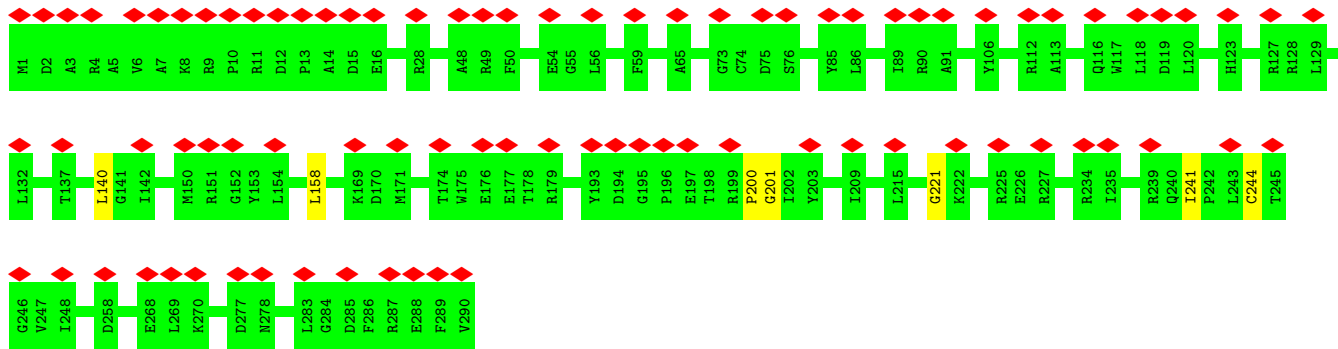


• Molecule 4: Triplex capsid protein 1

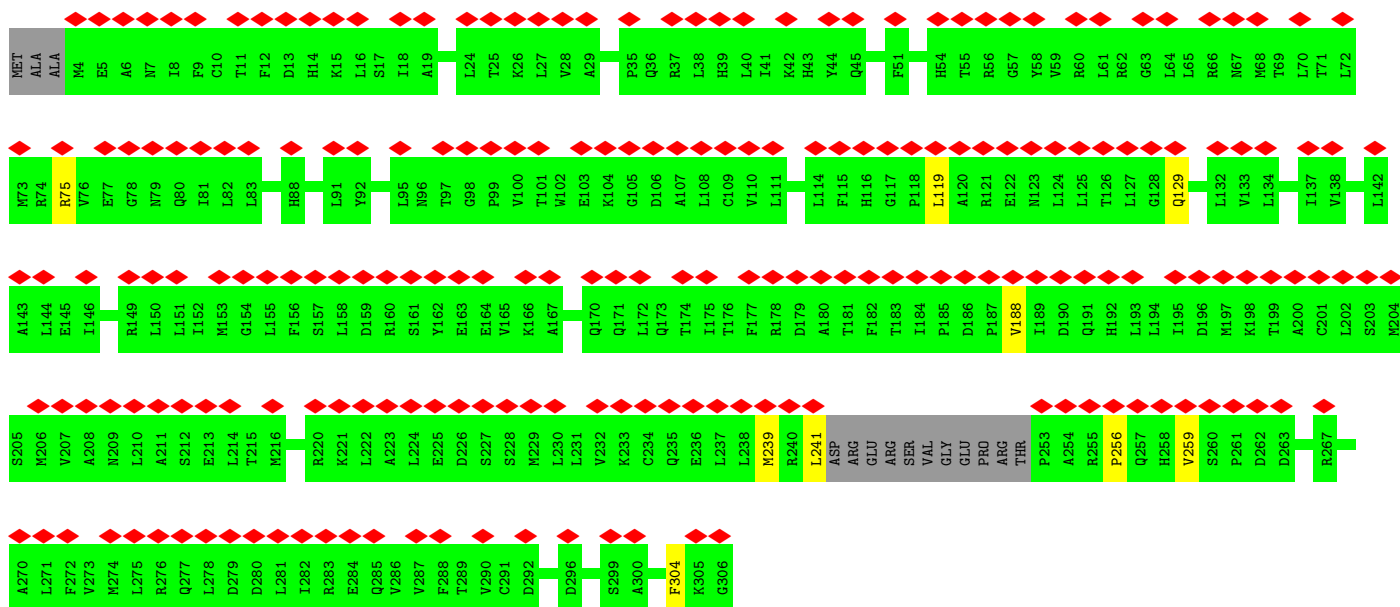
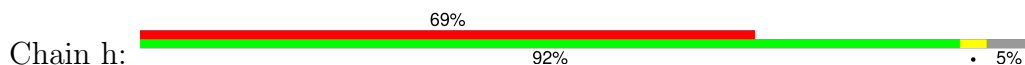




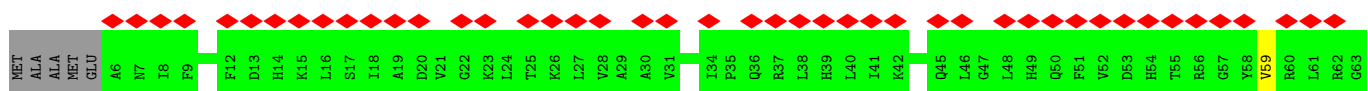
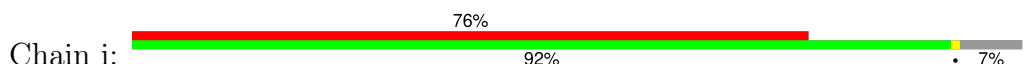
• Molecule 4: Triplex capsid protein 1

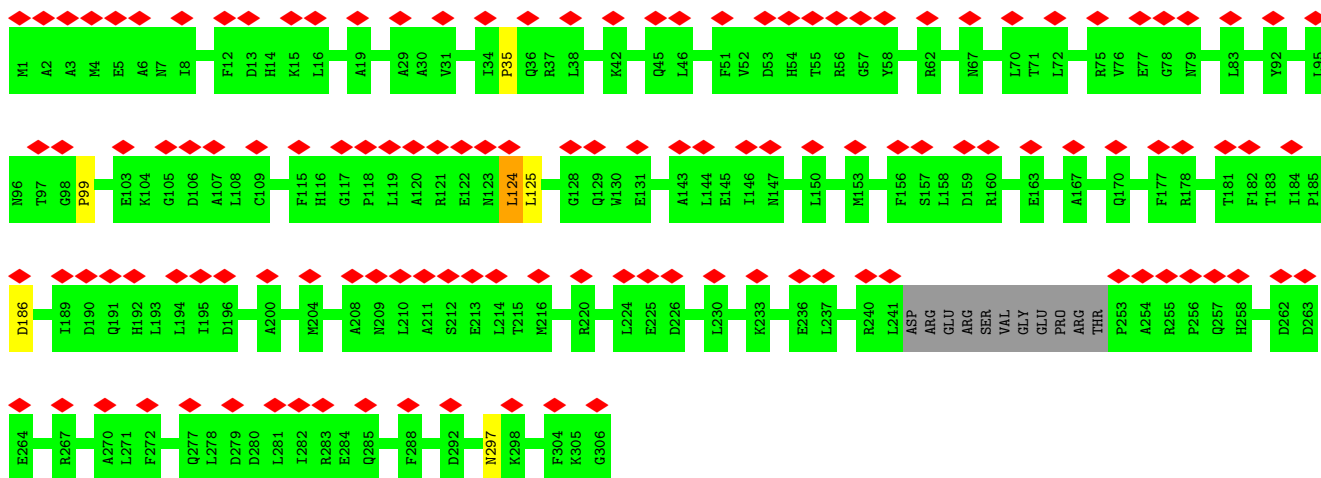


• Molecule 5: Triplex capsid protein 2

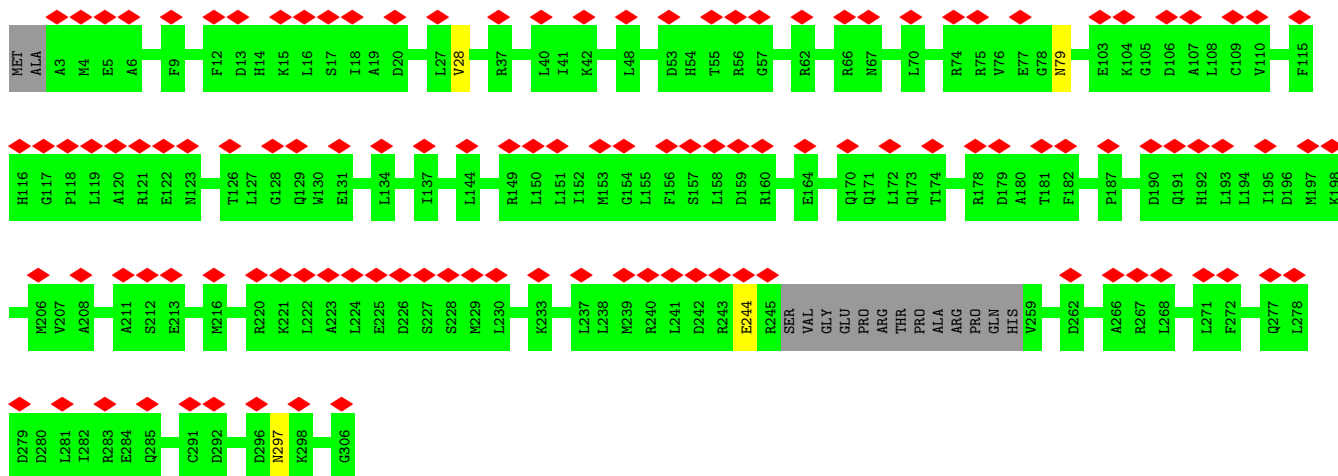
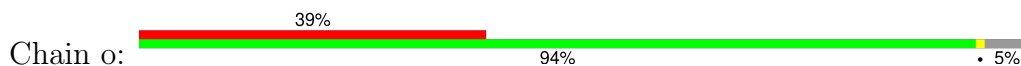


• Molecule 5: Triplex capsid protein 2

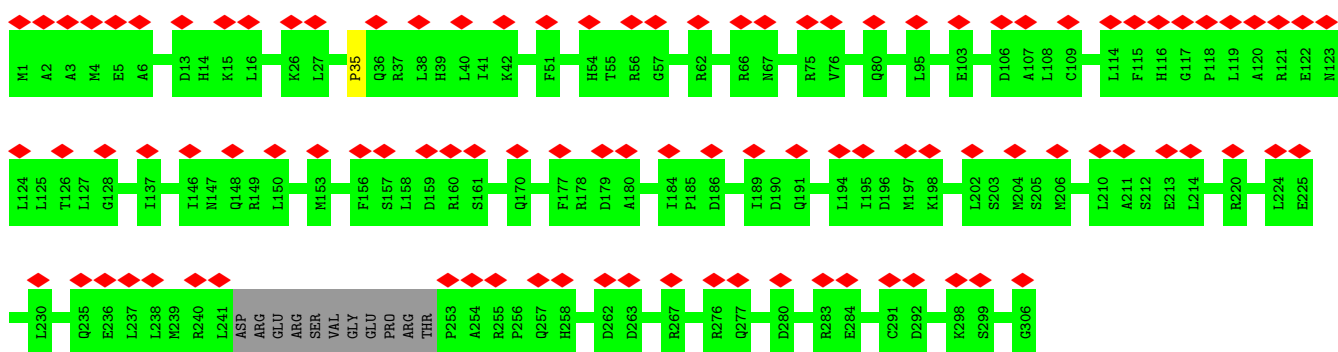




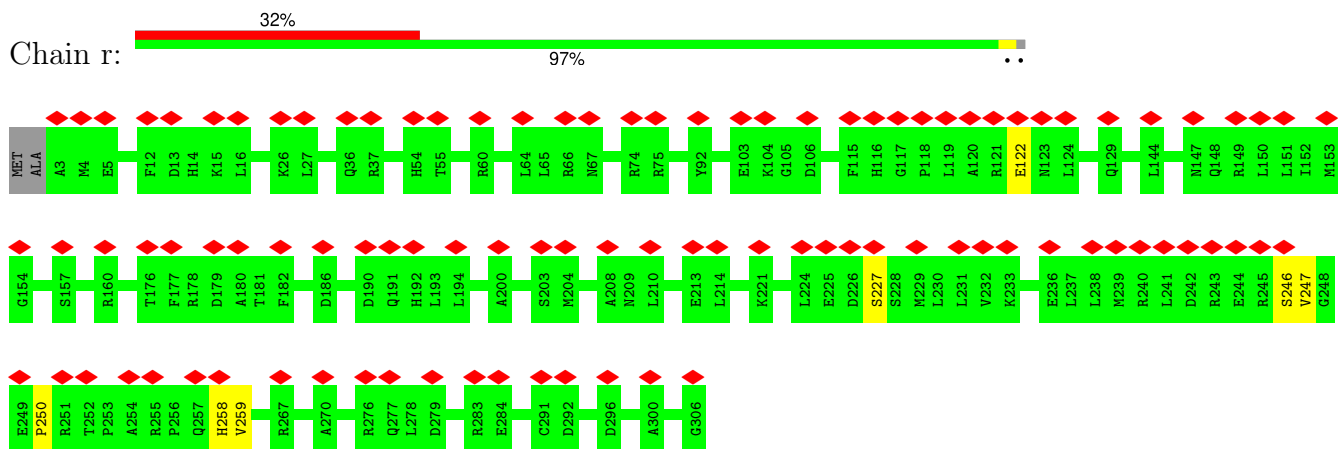
• Molecule 5: Triplex capsid protein 2



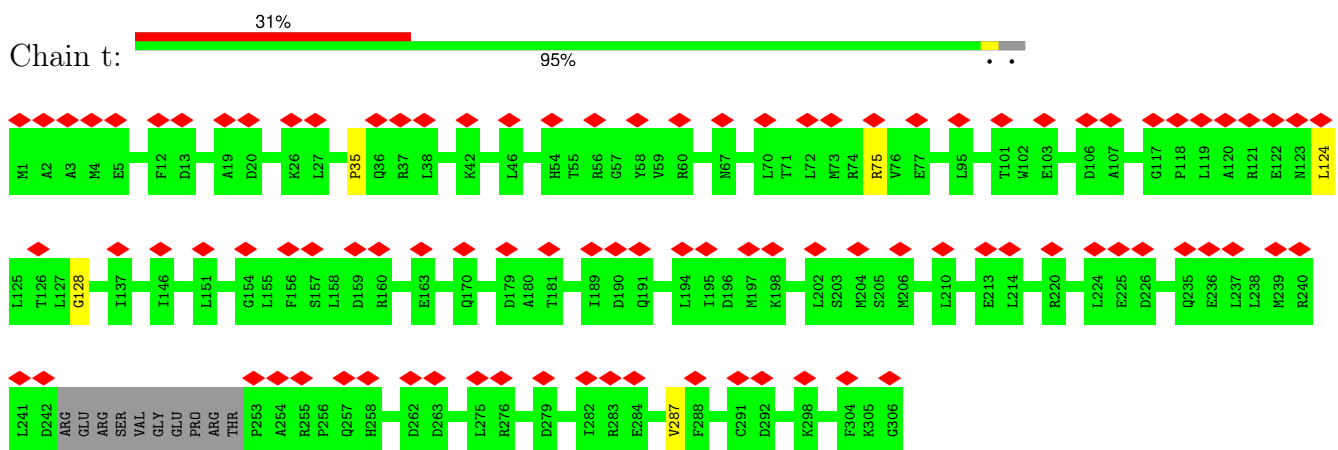
• Molecule 5: Triplex capsid protein 2



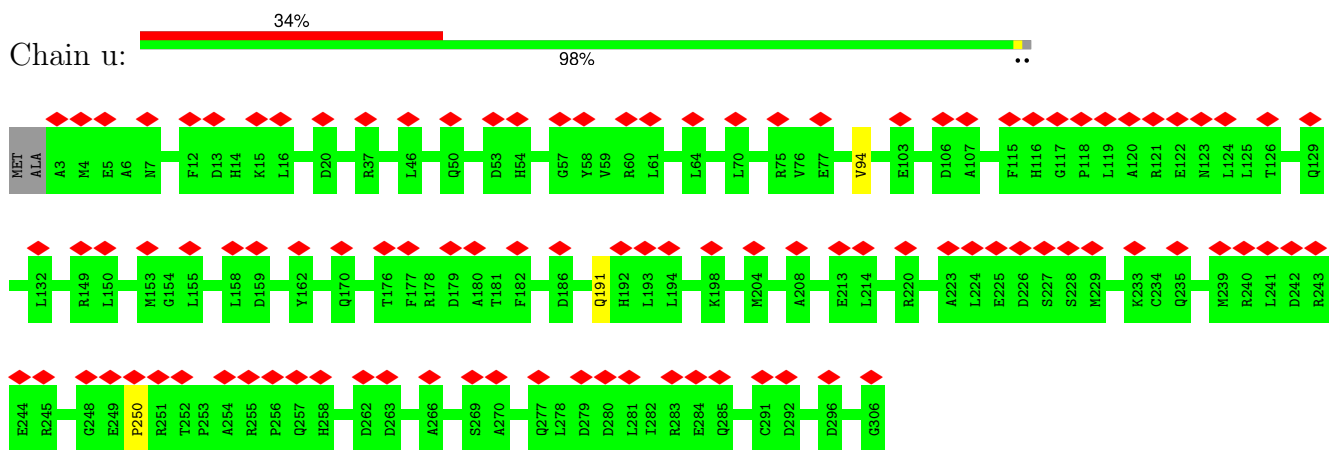
• Molecule 5: Triplex capsid protein 2



• Molecule 5: Triplex capsid protein 2



• Molecule 5: Triplex capsid protein 2



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	39600	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	2.7	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.203	Depositor
Minimum map value	-0.123	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	1352.4, 1352.4, 1352.4	wwPDB
Map dimensions	840, 840, 840	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.61, 1.61, 1.61	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	0	0.23	0/2366	0.37	0/3192
1	1	0.23	0/2366	0.38	0/3192
1	2	0.23	0/2366	0.38	0/3192
1	3	0.23	0/2366	0.37	0/3192
1	4	0.23	0/2366	0.38	0/3192
1	5	0.23	0/2366	0.37	0/3192
1	6	0.23	0/2366	0.37	0/3192
1	7	0.23	0/2366	0.38	0/3192
1	8	0.23	0/2366	0.37	0/3192
1	9	0.23	0/2366	0.38	0/3192
1	v	0.23	0/2366	0.38	0/3192
1	w	0.23	0/2366	0.38	0/3192
1	x	0.23	0/2366	0.38	0/3192
1	y	0.23	0/2366	0.37	0/3192
1	z	0.23	0/2366	0.37	0/3192
2	A	0.25	0/10780	0.44	0/14685
2	B	0.25	0/10824	0.44	0/14743
2	C	0.25	0/10942	0.44	1/14906 (0.0%)
2	D	0.25	0/10926	0.44	0/14884
2	E	0.25	0/10932	0.44	0/14892
2	F	0.25	0/10949	0.43	0/14916
2	G	0.25	0/10962	0.43	0/14933
2	H	0.25	0/10967	0.43	0/14940
2	I	0.25	0/10932	0.43	1/14892 (0.0%)
2	J	0.25	0/10835	0.43	1/14757 (0.0%)
2	K	0.25	0/10937	0.44	0/14899
2	L	0.25	0/10974	0.43	0/14950
2	M	0.25	0/10974	0.43	0/14950
2	N	0.25	0/10949	0.43	0/14916
2	O	0.25	0/10937	0.43	0/14899
2	P	0.25	0/10937	0.43	0/14899
3	Q	0.22	0/520	0.38	0/697
3	R	0.23	0/520	0.38	0/697
3	S	0.24	0/520	0.38	0/697

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
3	T	0.24	0/520	0.38	0/697
3	U	0.23	0/520	0.38	0/697
3	V	0.23	0/520	0.37	0/697
3	W	0.23	0/520	0.37	0/697
3	X	0.23	0/520	0.38	0/697
3	Y	0.23	0/520	0.37	0/697
3	Z	0.23	0/520	0.38	0/697
3	a	0.23	0/520	0.37	0/697
3	b	0.23	0/520	0.37	0/697
3	c	0.23	0/520	0.38	0/697
3	d	0.23	0/520	0.37	0/697
3	e	0.23	0/520	0.37	0/697
3	f	0.23	0/520	0.37	0/697
4	g	0.24	0/2138	0.44	0/2903
4	j	0.25	0/2374	0.43	0/3221
4	m	0.24	0/2374	0.43	0/3221
4	p	0.25	0/2374	0.43	0/3221
4	s	0.25	0/2374	0.43	0/3221
5	h	0.25	0/2361	0.44	0/3206
5	i	0.25	0/2300	0.46	0/3124
5	k	0.25	0/2361	0.43	0/3207
5	l	0.24	0/2453	0.43	0/3332
5	n	0.24	0/2379	0.45	1/3230 (0.0%)
5	o	0.24	0/2353	0.42	0/3193
5	q	0.24	0/2379	0.43	0/3230
5	r	0.24	0/2458	0.43	0/3339
5	t	0.25	0/2387	0.45	0/3241
5	u	0.24	0/2458	0.43	0/3339
All	All	0.25	0/254090	0.42	4/345321 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1367	LEU	CB-CG-CD2	-6.90	99.26	111.00
2	J	1367	LEU	CB-CG-CD1	-6.42	100.09	111.00
2	I	1367	LEU	CB-CG-CD2	-5.55	101.56	111.00
5	n	124	LEU	CA-CB-CG	5.21	127.28	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	0	283/285 (99%)	274 (97%)	6 (2%)	3 (1%)	12	45
1	1	283/285 (99%)	267 (94%)	13 (5%)	3 (1%)	12	45
1	2	283/285 (99%)	267 (94%)	14 (5%)	2 (1%)	19	54
1	3	283/285 (99%)	266 (94%)	11 (4%)	6 (2%)	5	33
1	4	283/285 (99%)	271 (96%)	10 (4%)	2 (1%)	19	54
1	5	283/285 (99%)	272 (96%)	7 (2%)	4 (1%)	9	39
1	6	283/285 (99%)	271 (96%)	10 (4%)	2 (1%)	19	54
1	7	283/285 (99%)	267 (94%)	13 (5%)	3 (1%)	12	45
1	8	283/285 (99%)	275 (97%)	5 (2%)	3 (1%)	12	45
1	9	283/285 (99%)	271 (96%)	8 (3%)	4 (1%)	9	39
1	v	283/285 (99%)	262 (93%)	13 (5%)	8 (3%)	4	28
1	w	283/285 (99%)	269 (95%)	12 (4%)	2 (1%)	19	54
1	x	283/285 (99%)	264 (93%)	14 (5%)	5 (2%)	7	35
1	y	283/285 (99%)	270 (95%)	11 (4%)	2 (1%)	19	54
1	z	283/285 (99%)	272 (96%)	7 (2%)	4 (1%)	9	39
2	A	1321/1370 (96%)	1230 (93%)	78 (6%)	13 (1%)	13	46
2	B	1329/1370 (97%)	1226 (92%)	80 (6%)	23 (2%)	7	36
2	C	1345/1370 (98%)	1259 (94%)	71 (5%)	15 (1%)	12	45
2	D	1342/1370 (98%)	1233 (92%)	94 (7%)	15 (1%)	12	45
2	E	1343/1370 (98%)	1233 (92%)	90 (7%)	20 (2%)	8	39
2	F	1346/1370 (98%)	1242 (92%)	87 (6%)	17 (1%)	10	41

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	G	1347/1370 (98%)	1250 (93%)	82 (6%)	15 (1%)	12	45
2	H	1348/1370 (98%)	1253 (93%)	86 (6%)	9 (1%)	19	54
2	I	1343/1370 (98%)	1243 (93%)	88 (7%)	12 (1%)	14	48
2	J	1329/1370 (97%)	1239 (93%)	76 (6%)	14 (1%)	12	45
2	K	1344/1370 (98%)	1249 (93%)	87 (6%)	8 (1%)	22	57
2	L	1349/1370 (98%)	1259 (93%)	77 (6%)	13 (1%)	13	46
2	M	1349/1370 (98%)	1250 (93%)	89 (7%)	10 (1%)	19	54
2	N	1346/1370 (98%)	1256 (93%)	81 (6%)	9 (1%)	19	54
2	O	1344/1370 (98%)	1243 (92%)	84 (6%)	17 (1%)	10	41
2	P	1344/1370 (98%)	1249 (93%)	81 (6%)	14 (1%)	13	46
3	Q	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	R	61/75 (81%)	57 (93%)	4 (7%)	0	100	100
3	S	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	T	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	U	61/75 (81%)	56 (92%)	5 (8%)	0	100	100
3	V	61/75 (81%)	56 (92%)	4 (7%)	1 (2%)	8	37
3	W	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	X	61/75 (81%)	59 (97%)	2 (3%)	0	100	100
3	Y	61/75 (81%)	57 (93%)	4 (7%)	0	100	100
3	Z	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	a	61/75 (81%)	59 (97%)	2 (3%)	0	100	100
3	b	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	c	61/75 (81%)	60 (98%)	1 (2%)	0	100	100
3	d	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
3	e	61/75 (81%)	57 (93%)	4 (7%)	0	100	100
3	f	61/75 (81%)	58 (95%)	3 (5%)	0	100	100
4	g	258/290 (89%)	234 (91%)	21 (8%)	3 (1%)	11	43
4	j	288/290 (99%)	267 (93%)	17 (6%)	4 (1%)	9	39
4	m	288/290 (99%)	272 (94%)	14 (5%)	2 (1%)	19	54
4	p	288/290 (99%)	269 (93%)	16 (6%)	3 (1%)	13	46
4	s	288/290 (99%)	266 (92%)	17 (6%)	5 (2%)	7	36

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	h	288/306 (94%)	260 (90%)	21 (7%)	7 (2%)	5	30
5	i	281/306 (92%)	257 (92%)	20 (7%)	4 (1%)	9	39
5	k	288/306 (94%)	268 (93%)	14 (5%)	6 (2%)	5	33
5	l	301/306 (98%)	274 (91%)	24 (8%)	3 (1%)	13	46
5	n	291/306 (95%)	271 (93%)	15 (5%)	5 (2%)	7	36
5	o	287/306 (94%)	266 (93%)	18 (6%)	3 (1%)	13	46
5	q	291/306 (95%)	279 (96%)	11 (4%)	1 (0%)	37	70
5	r	302/306 (99%)	275 (91%)	21 (7%)	6 (2%)	6	33
5	t	292/306 (95%)	269 (92%)	19 (6%)	4 (1%)	9	39
5	u	302/306 (99%)	275 (91%)	24 (8%)	3 (1%)	13	46
All	All	31023/31905 (97%)	28879 (93%)	1807 (6%)	337 (1%)	15	45

All (337) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	3	183	PRO
2	A	694	ASN
2	A	805	LYS
2	B	203	ALA
2	B	844	ASP
2	B	1054	CYS
2	B	1162	ALA
2	C	254	ILE
2	C	1002	LEU
2	D	39	TYR
2	D	970	ASP
2	E	691	PRO
2	E	1162	ALA
2	E	1183	VAL
2	F	337	PRO
2	F	340	PRO
2	H	970	ASP
2	J	862	GLU
2	J	970	ASP
2	K	771	TYR
2	K	970	ASP
2	N	970	ASP
2	N	1002	LEU

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Mol	Chain	Res	Type
2	O	1002	LEU
2	P	337	PRO
5	1	250	PRO
1	1	6	ILE
1	2	74	SER
1	3	190	ARG
1	9	179	PHE
2	A	45	ARG
2	A	1052	LYS
2	A	1138	GLU
2	A	1204	PRO
2	B	198	GLU
2	B	689	ALA
2	B	699	ALA
2	B	763	ASP
2	B	862	GLU
2	B	1002	LEU
2	C	699	ALA
2	C	769	ASP
2	C	898	PRO
2	D	254	ILE
2	D	340	PRO
2	D	350	HIS
2	D	489	GLY
2	D	699	ALA
2	D	1071	ILE
2	D	1109	ARG
2	D	1193	ARG
2	E	23	VAL
2	E	33	GLU
2	E	693	LEU
2	E	699	ALA
2	E	970	ASP
2	E	1054	CYS
2	F	144	GLU
2	F	691	PRO
2	F	728	GLU
2	F	1054	CYS
2	G	545	ASN
2	G	663	ASP
2	H	23	VAL
2	H	254	ILE

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Mol	Chain	Res	Type
2	I	23	VAL
2	I	33	GLU
2	I	413	LYS
2	I	545	ASN
2	I	871	PRO
2	J	33	GLU
2	J	364	GLU
2	J	699	ALA
2	K	33	GLU
2	L	254	ILE
2	L	699	ALA
2	L	970	ASP
2	L	1002	LEU
2	M	33	GLU
2	M	272	VAL
2	M	771	TYR
2	M	970	ASP
2	M	1002	LEU
2	N	23	VAL
2	O	139	LEU
2	O	481	CYS
2	O	699	ALA
2	O	970	ASP
2	O	1070	ASP
2	P	43	PRO
2	P	317	SER
2	P	871	PRO
2	P	970	ASP
4	g	277	ASP
5	h	129	GLN
5	h	259	VAL
5	i	178	ARG
5	k	35	PRO
5	k	304	PHE
5	n	35	PRO
5	o	28	VAL
5	o	244	GLU
4	p	73	GLY
5	q	35	PRO
5	r	259	VAL
4	s	200	PRO
5	t	75	ARG

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Mol	Chain	Res	Type
1	v	74	SER
1	0	260	ASN
1	3	191	HIS
1	5	70	ASN
1	5	241	MET
1	8	6	ILE
2	A	168	ALA
2	A	1181	MET
2	B	746	ALA
2	B	991	PHE
2	C	337	PRO
2	C	862	GLU
2	C	1227	ALA
2	D	1002	LEU
2	E	3	ASN
2	E	349	ALA
2	E	518	VAL
2	E	688	SER
2	E	898	PRO
2	E	929	THR
2	F	862	GLU
2	G	518	VAL
2	G	752	SER
2	I	254	ILE
2	I	343	SER
2	I	970	ASP
2	J	404	ASP
2	J	413	LYS
2	J	1298	ASP
2	K	45	ARG
2	K	124	PRO
2	K	343	SER
2	K	1070	ASP
2	L	22	HIS
2	L	33	GLU
2	M	317	SER
2	M	343	SER
2	M	489	GLY
2	N	812	PHE
2	N	847	ALA
2	O	545	ASN
2	O	939	PHE

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Mol	Chain	Res	Type
2	O	1298	ASP
2	P	44	GLU
2	P	545	ASN
2	P	699	ALA
5	h	75	ARG
4	j	122	PRO
4	j	140	LEU
4	j	195	GLY
5	k	102	TRP
5	k	303	ILE
5	n	124	LEU
4	p	140	LEU
5	r	122	GLU
5	r	247	VAL
4	s	140	LEU
4	s	201	GLY
5	t	35	PRO
5	u	250	PRO
1	v	192	ALA
1	v	260	ASN
1	w	260	ASN
1	x	260	ASN
1	y	260	ASN
1	z	151	THR
1	z	260	ASN
1	0	70	ASN
1	1	70	ASN
1	1	260	ASN
1	3	70	ASN
1	5	260	ASN
1	7	176	ARG
1	8	260	ASN
1	9	6	ILE
1	9	70	ASN
2	B	413	LYS
2	B	436	ALA
2	B	812	PHE
2	B	1126	GLU
2	C	847	ALA
2	C	1142	LEU
2	D	54	PHE
2	E	999	PRO

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Mol	Chain	Res	Type
2	F	128	PRO
2	F	489	GLY
2	F	665	ALA
2	F	752	SER
2	F	939	PHE
2	F	1307	THR
2	G	140	ARG
2	G	337	PRO
2	G	1223	GLN
2	H	413	LYS
2	H	939	PHE
2	H	1002	LEU
2	J	939	PHE
2	J	1109	ARG
2	L	481	CYS
2	L	735	ASP
2	L	939	PHE
2	L	999	PRO
2	L	1268	THR
2	N	481	CYS
2	N	939	PHE
2	O	124	PRO
2	O	974	PRO
2	O	999	PRO
2	P	771	TYR
4	g	240	GLN
4	j	244	CYS
5	k	75	ARG
5	l	128	GLY
4	m	244	CYS
5	n	125	LEU
5	r	227	SER
5	r	258	HIS
4	s	244	CYS
1	x	74	SER
1	z	70	ASN
1	3	6	ILE
1	4	6	ILE
1	4	70	ASN
1	5	6	ILE
1	7	187	ASN
1	8	70	ASN

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Mol	Chain	Res	Type
1	9	260	ASN
2	A	1030	PRO
2	A	1202	VAL
2	A	1350	HIS
2	B	349	ALA
2	B	690	LEU
2	B	705	ALA
2	B	970	ASP
2	B	999	PRO
2	B	1143	LEU
2	C	695	ASN
2	C	1054	CYS
2	C	1109	ARG
2	D	939	PHE
2	E	939	PHE
2	E	1171	ALA
2	E	1323	PRO
2	F	1152	THR
2	G	349	ALA
2	H	54	PHE
2	H	999	PRO
2	I	124	PRO
2	I	1140	PRO
2	J	5	SER
2	J	905	GLN
2	K	999	PRO
2	L	124	PRO
2	L	1108	VAL
2	N	124	PRO
2	O	31	MET
2	O	337	PRO
2	O	1030	PRO
2	O	1171	ALA
2	P	5	SER
2	P	939	PHE
2	P	999	PRO
3	V	38	PRO
4	g	160	THR
5	h	256	PRO
5	h	304	PHE
5	i	261	PRO
5	k	103	GLU

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Mol	Chain	Res	Type
5	o	79	ASN
5	u	191	GLN
1	v	145	VAL
1	v	182	LYS
1	w	182	LYS
1	x	182	LYS
1	y	70	ASN
1	0	6	ILE
1	3	260	ASN
1	6	6	ILE
1	6	70	ASN
2	B	481	CYS
2	D	707	VAL
2	D	1030	PRO
2	G	128	PRO
2	G	410	VAL
2	G	535	PRO
2	G	687	ILE
2	H	343	SER
2	P	33	GLU
5	h	119	LEU
5	i	59	VAL
4	s	221	GLY
1	x	141	ARG
1	7	6	ILE
2	F	535	PRO
2	F	1030	PRO
2	G	457	PRO
2	J	1108	VAL
2	N	337	PRO
4	m	195	GLY
1	v	6	ILE
1	v	181	VAL
2	A	1071	ILE
5	h	188	VAL
5	l	78	GLY
5	n	186	ASP
1	2	70	ASN
2	A	339	LEU
2	E	489	GLY
2	G	1030	PRO
2	G	1071	ILE

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Mol	Chain	Res	Type
2	I	999	PRO
2	J	363	GLY
2	O	23	VAL
5	i	128	GLY
5	t	287	VAL
1	x	70	ASN
2	C	535	PRO
2	C	861	VAL
2	F	457	PRO
2	M	124	PRO
2	M	1030	PRO
2	P	1030	PRO
5	n	99	PRO
4	p	195	GLY
5	u	94	VAL
1	z	6	ILE
2	I	1030	PRO
5	t	128	GLY
1	v	70	ASN
5	r	250	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	256/257 (100%)	256 (100%)	0	100	100
1	1	256/257 (100%)	256 (100%)	0	100	100
1	2	256/257 (100%)	256 (100%)	0	100	100
1	3	256/257 (100%)	256 (100%)	0	100	100
1	4	256/257 (100%)	256 (100%)	0	100	100
1	5	256/257 (100%)	256 (100%)	0	100	100
1	6	256/257 (100%)	256 (100%)	0	100	100
1	7	256/257 (100%)	255 (100%)	1 (0%)	89	91

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	8	256/257 (100%)	256 (100%)	0	100	100
1	9	256/257 (100%)	256 (100%)	0	100	100
1	v	256/257 (100%)	256 (100%)	0	100	100
1	w	256/257 (100%)	256 (100%)	0	100	100
1	x	256/257 (100%)	256 (100%)	0	100	100
1	y	256/257 (100%)	256 (100%)	0	100	100
1	z	256/257 (100%)	256 (100%)	0	100	100
2	A	1156/1192 (97%)	1153 (100%)	3 (0%)	91	92
2	B	1162/1192 (98%)	1158 (100%)	4 (0%)	91	92
2	C	1174/1192 (98%)	1171 (100%)	3 (0%)	91	92
2	D	1173/1192 (98%)	1167 (100%)	6 (0%)	86	90
2	E	1174/1192 (98%)	1166 (99%)	8 (1%)	81	86
2	F	1175/1192 (99%)	1170 (100%)	5 (0%)	89	91
2	G	1177/1192 (99%)	1175 (100%)	2 (0%)	92	94
2	H	1177/1192 (99%)	1173 (100%)	4 (0%)	91	92
2	I	1174/1192 (98%)	1171 (100%)	3 (0%)	91	92
2	J	1161/1192 (97%)	1156 (100%)	5 (0%)	89	91
2	K	1174/1192 (98%)	1170 (100%)	4 (0%)	91	92
2	L	1178/1192 (99%)	1176 (100%)	2 (0%)	92	94
2	M	1178/1192 (99%)	1176 (100%)	2 (0%)	92	94
2	N	1175/1192 (99%)	1170 (100%)	5 (0%)	89	91
2	O	1174/1192 (98%)	1170 (100%)	4 (0%)	91	92
2	P	1174/1192 (98%)	1170 (100%)	4 (0%)	91	92
3	Q	59/68 (87%)	59 (100%)	0	100	100
3	R	59/68 (87%)	59 (100%)	0	100	100
3	S	59/68 (87%)	59 (100%)	0	100	100
3	T	59/68 (87%)	59 (100%)	0	100	100
3	U	59/68 (87%)	59 (100%)	0	100	100
3	V	59/68 (87%)	59 (100%)	0	100	100
3	W	59/68 (87%)	59 (100%)	0	100	100
3	X	59/68 (87%)	59 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	Y	59/68 (87%)	58 (98%)	1 (2%)	56	72
3	Z	59/68 (87%)	59 (100%)	0	100	100
3	a	59/68 (87%)	59 (100%)	0	100	100
3	b	59/68 (87%)	58 (98%)	1 (2%)	56	72
3	c	59/68 (87%)	59 (100%)	0	100	100
3	d	59/68 (87%)	59 (100%)	0	100	100
3	e	59/68 (87%)	59 (100%)	0	100	100
3	f	59/68 (87%)	59 (100%)	0	100	100
4	g	228/252 (90%)	227 (100%)	1 (0%)	89	91
4	j	252/252 (100%)	251 (100%)	1 (0%)	89	91
4	m	252/252 (100%)	250 (99%)	2 (1%)	79	84
4	p	252/252 (100%)	250 (99%)	2 (1%)	79	84
4	s	252/252 (100%)	250 (99%)	2 (1%)	79	84
5	h	262/273 (96%)	260 (99%)	2 (1%)	79	84
5	i	256/273 (94%)	256 (100%)	0	100	100
5	k	262/273 (96%)	260 (99%)	2 (1%)	79	84
5	l	272/273 (100%)	272 (100%)	0	100	100
5	n	263/273 (96%)	262 (100%)	1 (0%)	89	91
5	o	261/273 (96%)	260 (100%)	1 (0%)	89	91
5	q	263/273 (96%)	263 (100%)	0	100	100
5	r	272/273 (100%)	271 (100%)	1 (0%)	89	91
5	t	264/273 (97%)	263 (100%)	1 (0%)	89	91
5	u	272/273 (100%)	272 (100%)	0	100	100
All	All	27423/28005 (98%)	27340 (100%)	83 (0%)	90	92

All (83) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	7	170	ASN
2	A	1362	LEU
2	A	1367	LEU
2	A	1370	SER
2	B	86	LEU
2	B	142	THR

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Mol	Chain	Res	Type
2	B	231	ASN
2	B	1303	CYS
2	C	204	ARG
2	C	637	ASN
2	C	1370	SER
2	D	431	LEU
2	D	450	CYS
2	D	707	VAL
2	D	1303	CYS
2	D	1362	LEU
2	D	1370	SER
2	E	204	ARG
2	E	431	LEU
2	E	708	ASN
2	E	739	LEU
2	E	1183	VAL
2	E	1303	CYS
2	E	1362	LEU
2	E	1370	SER
2	F	207	LEU
2	F	226	THR
2	F	1303	CYS
2	F	1362	LEU
2	F	1367	LEU
2	G	1362	LEU
2	G	1370	SER
2	H	204	ARG
2	H	207	LEU
2	H	1303	CYS
2	H	1370	SER
2	I	431	LEU
2	I	1303	CYS
2	I	1370	SER
2	J	207	LEU
2	J	231	ASN
2	J	1057	VAL
2	J	1303	CYS
2	J	1370	SER
2	K	207	LEU
2	K	212	ARG
2	K	1303	CYS
2	K	1370	SER

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Mol	Chain	Res	Type
2	L	1057	VAL
2	L	1370	SER
2	M	1057	VAL
2	M	1364	GLN
2	N	116	VAL
2	N	226	THR
2	N	1057	VAL
2	N	1303	CYS
2	N	1370	SER
2	O	207	LEU
2	O	231	ASN
2	O	431	LEU
2	O	1370	SER
2	P	1057	VAL
2	P	1303	CYS
2	P	1366	MET
2	P	1368	PHE
3	Y	73	THR
3	b	73	THR
4	g	158	LEU
5	h	239	MET
5	h	241	LEU
4	j	158	LEU
5	k	82	LEU
5	k	238	LEU
4	m	158	LEU
4	m	241	ILE
5	n	297	ASN
5	o	297	ASN
4	p	158	LEU
4	p	241	ILE
5	r	246	SER
4	s	158	LEU
4	s	241	ILE
5	t	124	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (102) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	534	HIS
2	A	560	ASN
2	A	984	HIS

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Mol	Chain	Res	Type
2	A	1191	ASN
2	B	422	ASN
2	B	748	HIS
2	B	795	ASN
2	B	914	GLN
2	B	940	HIS
2	B	1080	ASN
2	B	1319	GLN
2	B	1364	GLN
2	C	22	HIS
2	C	903	GLN
2	C	914	GLN
2	C	940	HIS
2	C	1191	ASN
2	D	422	ASN
2	D	514	GLN
2	D	694	ASN
2	D	1080	ASN
2	E	534	HIS
2	E	605	ASN
2	E	903	GLN
2	E	914	GLN
2	E	940	HIS
2	E	1093	ASN
2	E	1264	GLN
2	E	1313	ASN
2	G	96	GLN
2	G	231	ASN
2	G	455	HIS
2	G	803	ASN
2	G	1079	GLN
2	G	1120	ASN
2	G	1264	GLN
2	G	1313	ASN
2	G	1353	ASN
2	H	59	ASN
2	H	214	ASN
2	H	618	HIS
2	H	711	HIS
2	H	919	ASN
2	H	1133	HIS
2	I	605	ASN

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Mol	Chain	Res	Type
2	I	889	HIS
2	I	901	HIS
2	I	985	ASN
2	J	199	ASN
2	J	560	ASN
2	J	889	HIS
2	J	901	HIS
2	J	945	ASN
2	J	969	HIS
2	J	1313	ASN
2	J	1364	GLN
2	K	438	GLN
2	K	749	HIS
2	K	889	HIS
2	K	901	HIS
2	K	919	ASN
2	K	945	ASN
2	K	969	HIS
2	K	1124	HIS
2	L	462	GLN
2	L	618	HIS
2	L	889	HIS
2	L	903	GLN
2	L	919	ASN
2	L	945	ASN
2	L	1027	HIS
2	L	1235	GLN
2	M	889	HIS
2	M	945	ASN
2	N	618	HIS
2	N	889	HIS
2	N	1023	GLN
2	O	889	HIS
2	O	914	GLN
2	O	1235	GLN
2	P	94	HIS
2	P	231	ASN
2	P	618	HIS
2	P	889	HIS
2	P	1223	GLN
2	P	1235	GLN
2	P	1255	ASN

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Mol	Chain	Res	Type
3	V	37	HIS
4	g	211	HIS
5	h	80	GLN
5	h	88	HIS
5	l	80	GLN
5	o	43	HIS
5	o	80	GLN
4	p	211	HIS
5	q	297	ASN
4	s	211	HIS
5	t	39	HIS
5	t	173	GLN
5	t	192	HIS
1	v	170	ASN
1	w	256	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

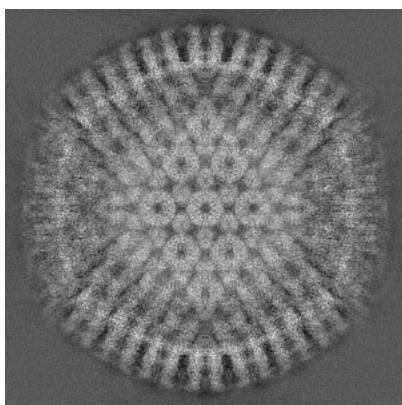
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8703. These allow visual inspection of the internal detail of the map and identification of artifacts.

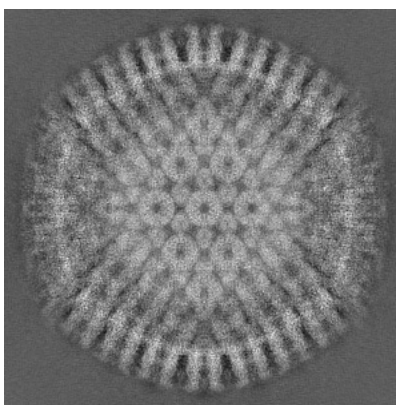
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

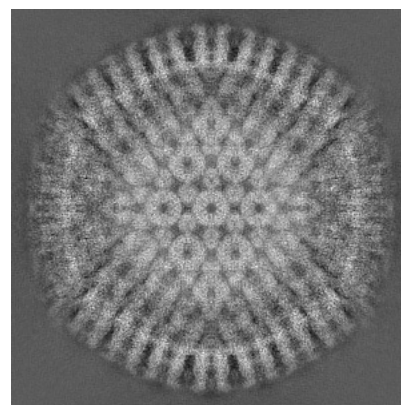
6.1.1 Primary map



X



Y

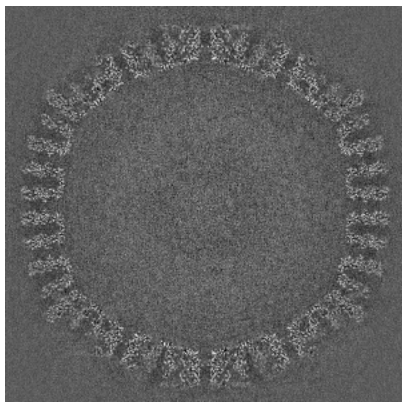


Z

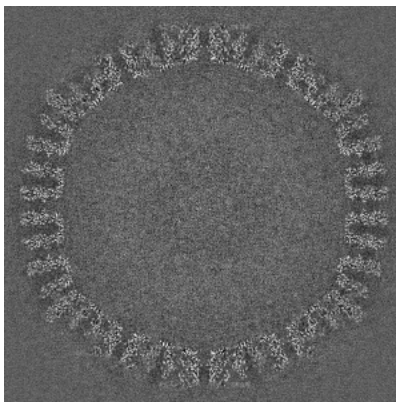
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

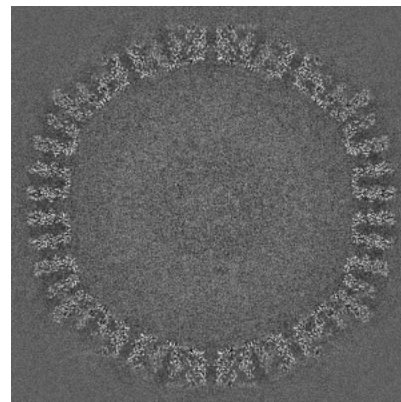
6.2.1 Primary map



X Index: 420



Y Index: 420

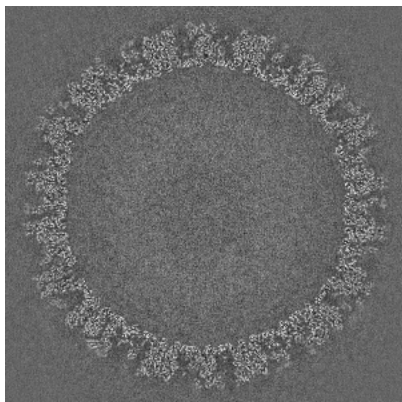


Z Index: 420

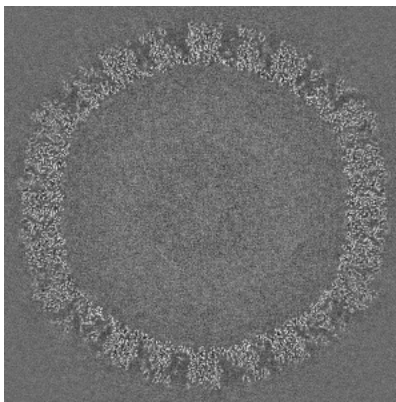
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

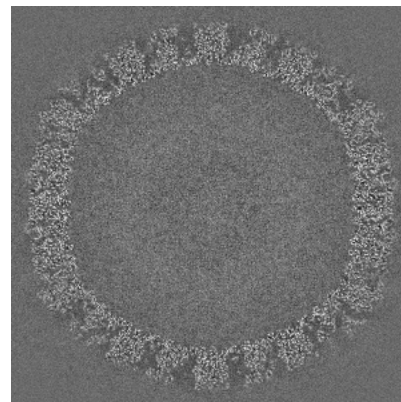
6.3.1 Primary map



X Index: 352



Y Index: 401

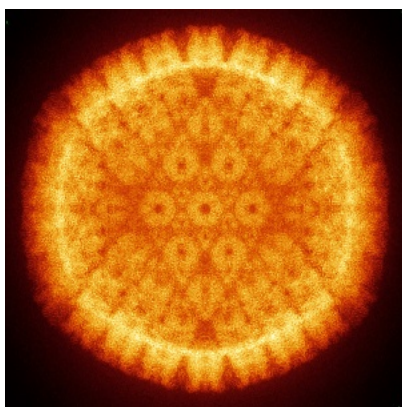


Z Index: 439

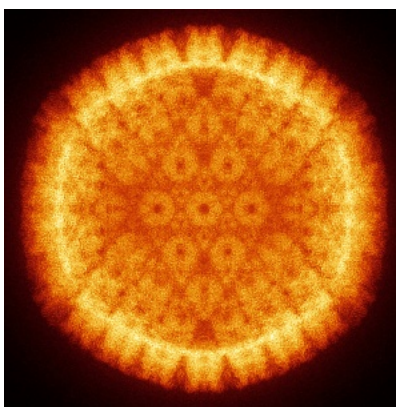
The images above show the largest variance slices of the map in three orthogonal directions.

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

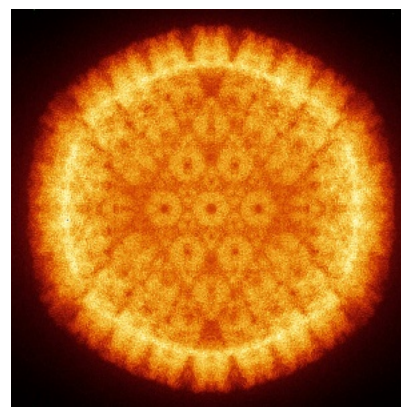
6.4.1 Primary map



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



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.05. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

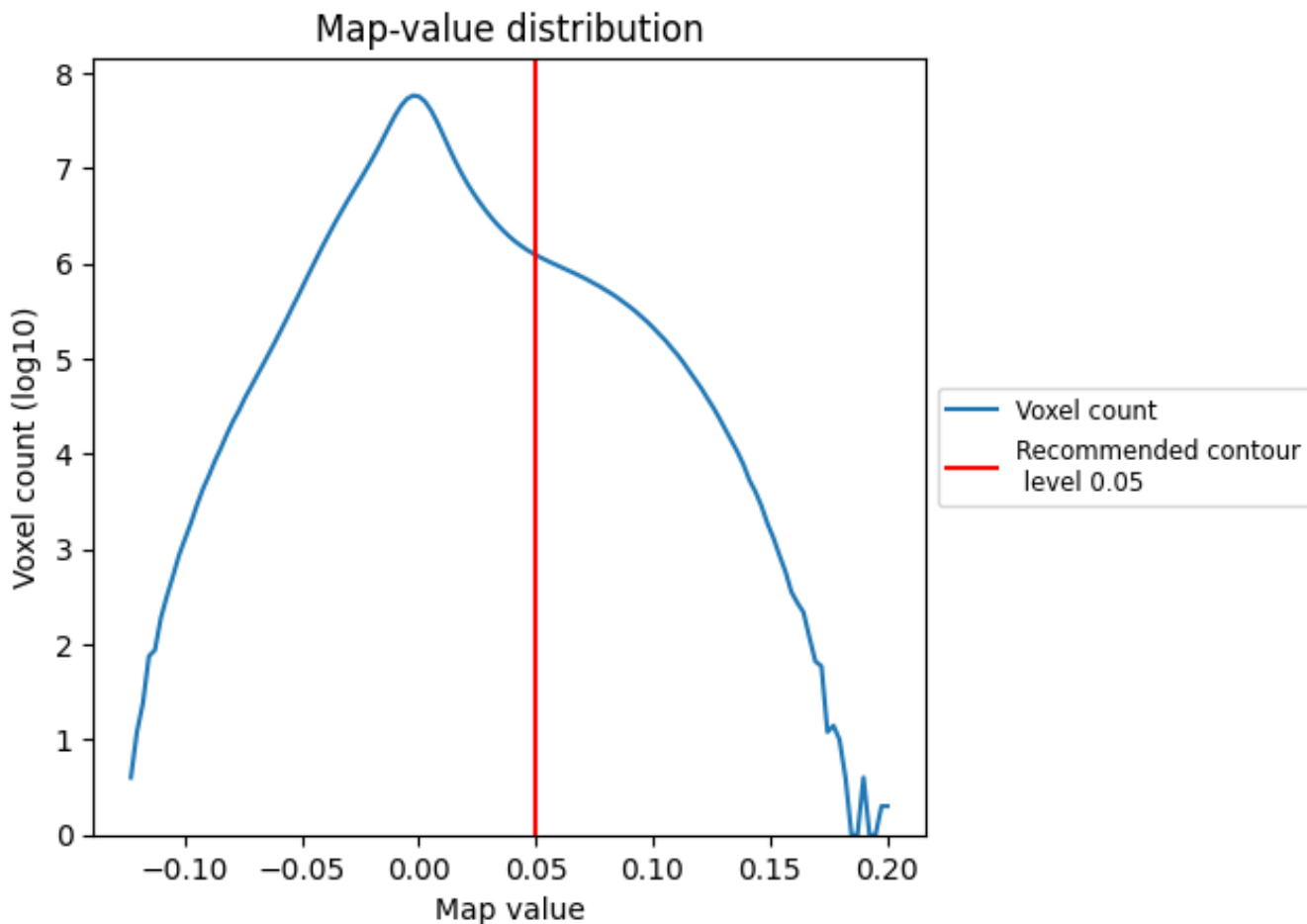
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

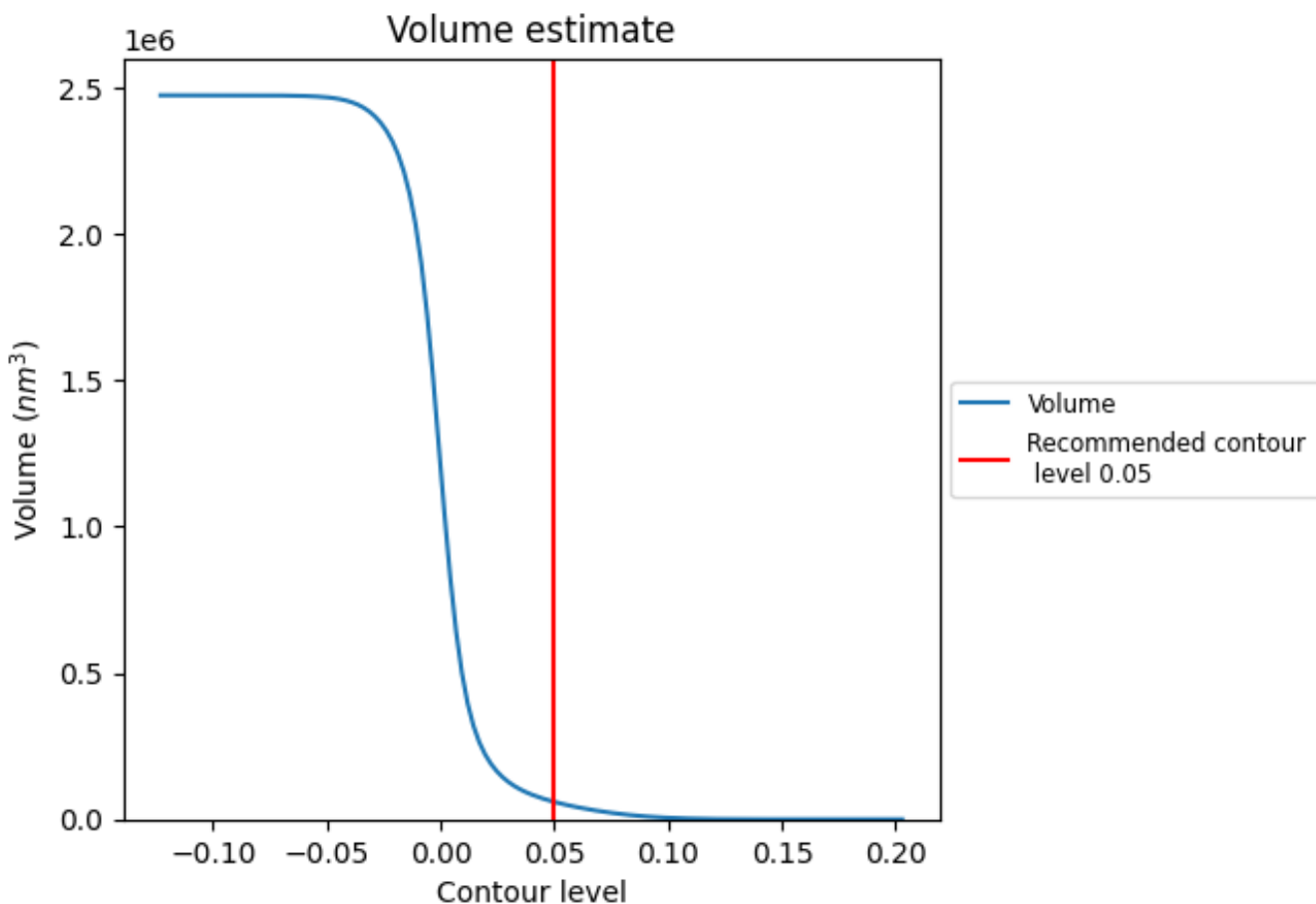
This section contains the results of statistical analysis of the map.

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.

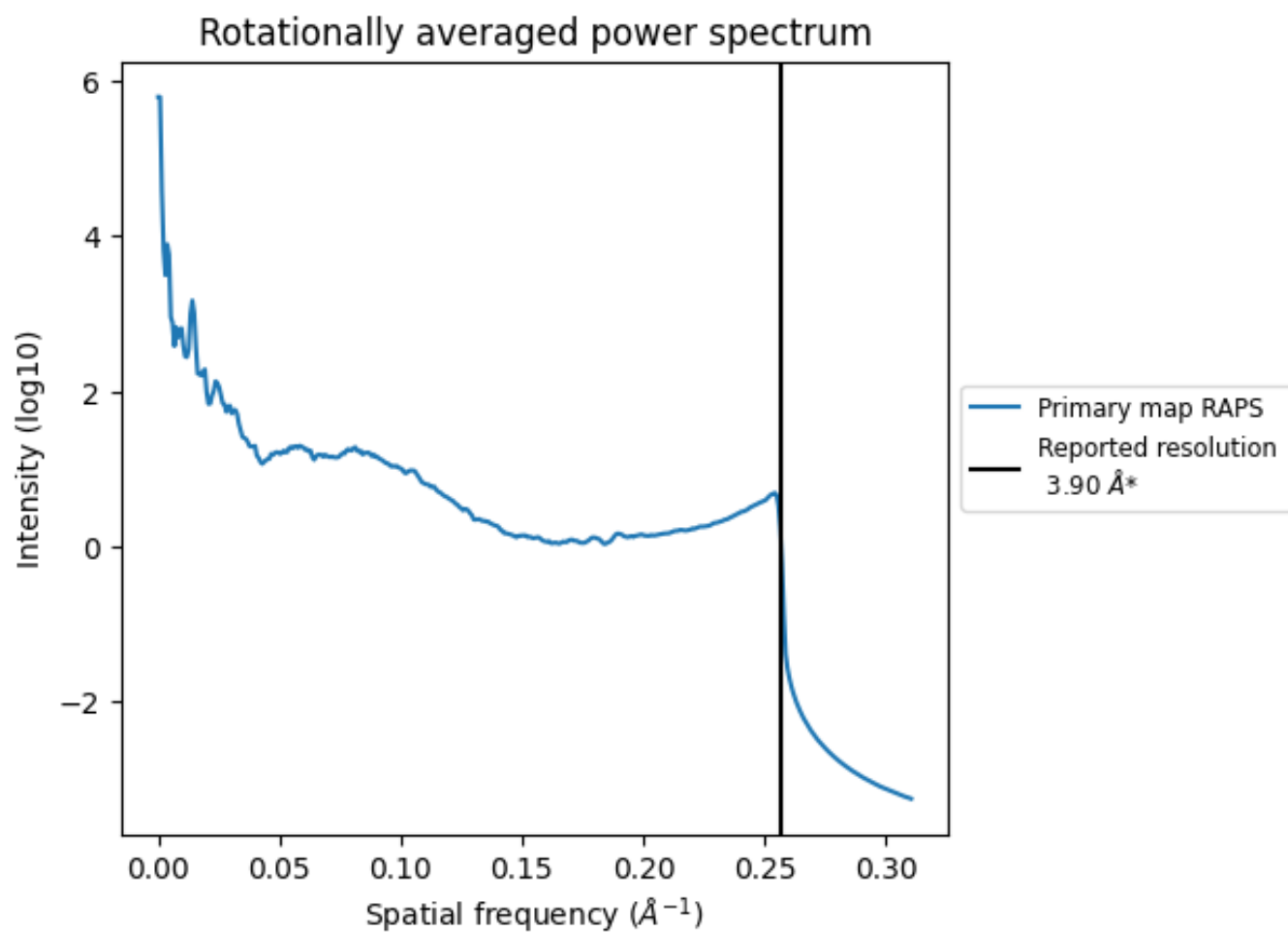
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 59607 nm^3 ; this corresponds to an approximate mass of 53844 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 0.256 Å⁻¹

8 Fourier-Shell correlation

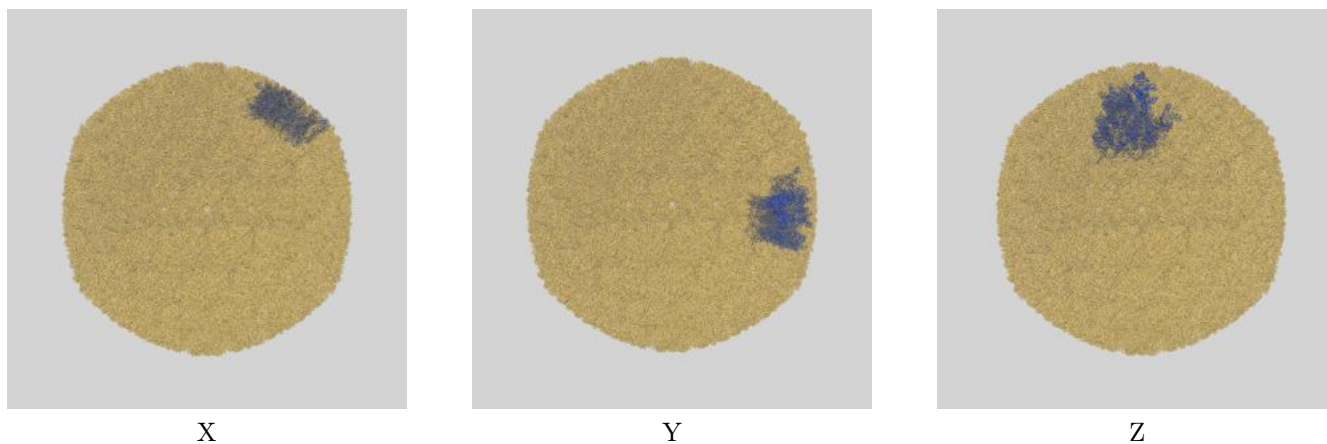
This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

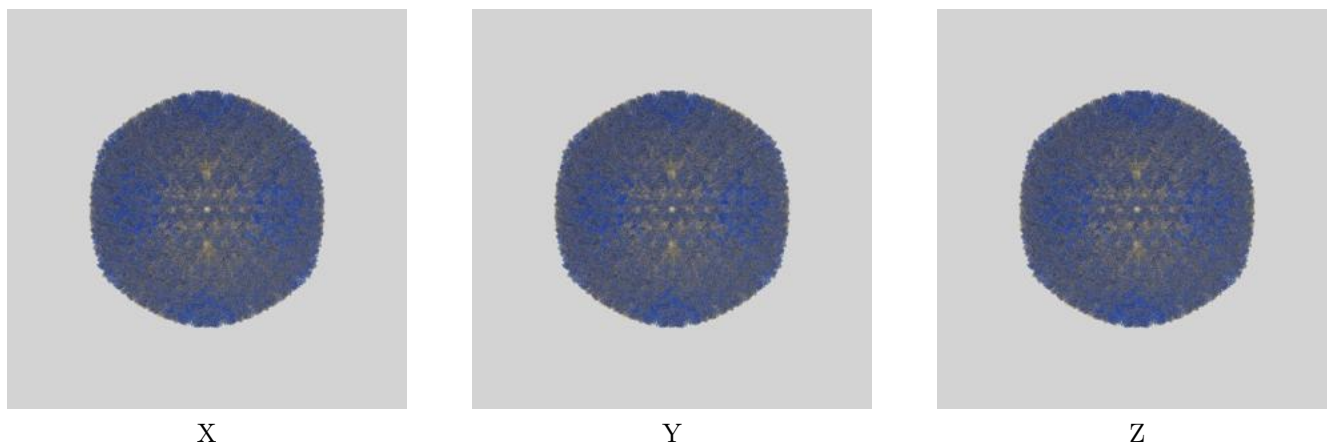
This section contains information regarding the fit between EMDB map EMD-8703 and PDB model 5VKU. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlays

9.1.1 Map-model overlay [i](#)

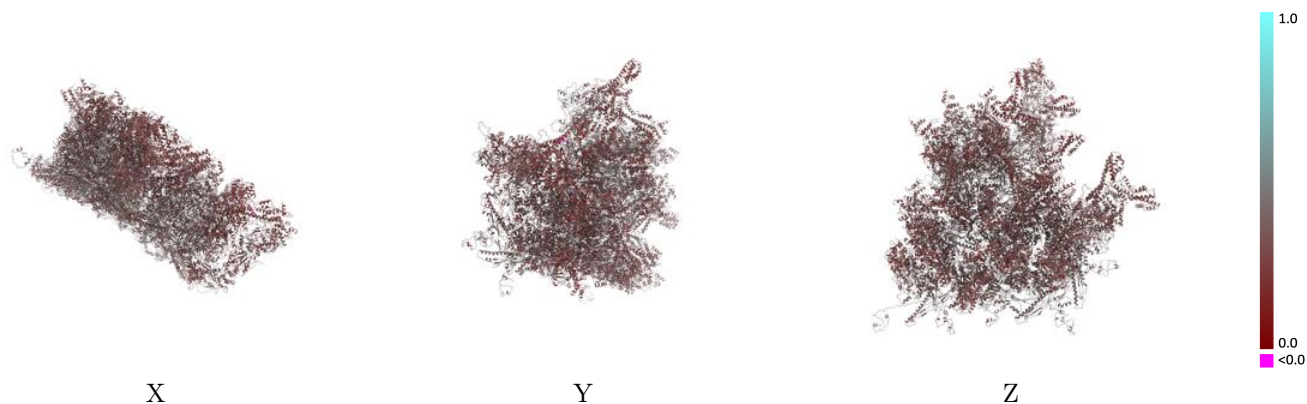


9.1.2 Map-model assembly overlay [i](#)



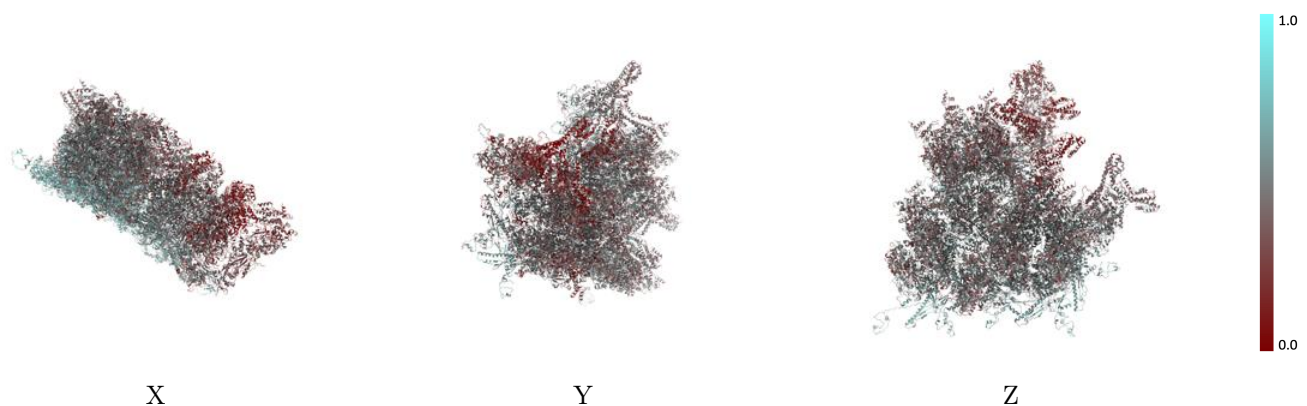
The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



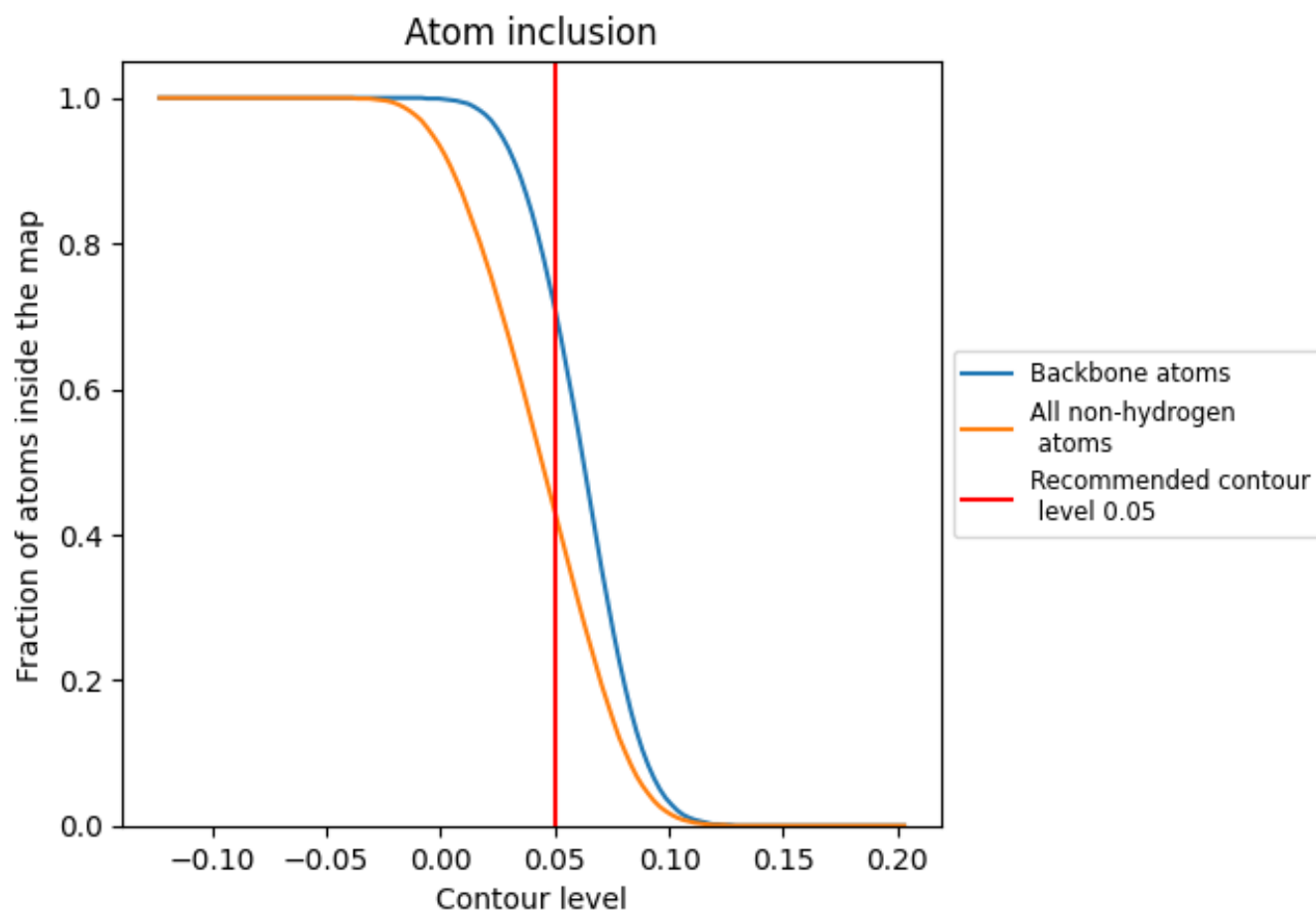
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.05).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 71% of all backbone atoms, 43% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4310	 0.3470
0	 0.3760	 0.3020
1	 0.3730	 0.3070
2	 0.1320	 0.2890
3	 0.2690	 0.2770
4	 0.4040	 0.3190
5	 0.3450	 0.2850
6	 0.3680	 0.3050
7	 0.4100	 0.3090
8	 0.3800	 0.3030
9	 0.3770	 0.3140
A	 0.3050	 0.3280
B	 0.4120	 0.3430
C	 0.4470	 0.3540
D	 0.4700	 0.3600
E	 0.4720	 0.3630
F	 0.4490	 0.3580
G	 0.4130	 0.3450
H	 0.4860	 0.3590
I	 0.4920	 0.3670
J	 0.4900	 0.3660
K	 0.4940	 0.3690
L	 0.4950	 0.3710
M	 0.4800	 0.3610
N	 0.4910	 0.3670
O	 0.4950	 0.3670
P	 0.4940	 0.3650
Q	 0.1730	 0.2680
R	 0.2630	 0.2730
S	 0.3050	 0.2750
T	 0.3330	 0.2920
U	 0.3330	 0.2860
V	 0.3250	 0.2910
W	 0.2850	 0.2920
X	 0.3710	 0.2930



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Chain	Atom inclusion	Q-score
Y	0.3760	0.3030
Z	0.3920	0.3170
a	0.3730	0.3000
b	0.3760	0.2850
c	0.3590	0.2890
d	0.3880	0.3160
e	0.3800	0.3000
f	0.3670	0.2860
g	0.2420	0.3340
h	0.2850	0.3180
i	0.2500	0.3320
j	0.4910	0.3740
k	0.4690	0.3600
l	0.4500	0.3620
m	0.4580	0.3500
n	0.4450	0.3520
o	0.4500	0.3530
p	0.4770	0.3570
q	0.4690	0.3630
r	0.4660	0.3550
s	0.4890	0.3710
t	0.4800	0.3690
u	0.4590	0.3580
v	0.0800	0.2740
w	0.0930	0.2480
x	0.2160	0.2720
y	0.3910	0.3270
z	0.3850	0.3050