



## wwPDB EM Validation Summary Report ⓘ

Feb 14, 2024 – 06:50 AM EST

PDB ID : 3K1Q  
EMDB ID : EMD-1653  
Title : Backbone model of an aquareovirus virion by cryo-electron microscopy and bioinformatics  
Authors : Cheng, L.P.; Zhu, J.; Hiu, W.H.; Zhang, X.K.; Honig, B.; Fang, Q.; Zhou, Z.H.  
Deposited on : 2009-09-28  
Resolution : 4.50 Å(reported)

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<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>.

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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 : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

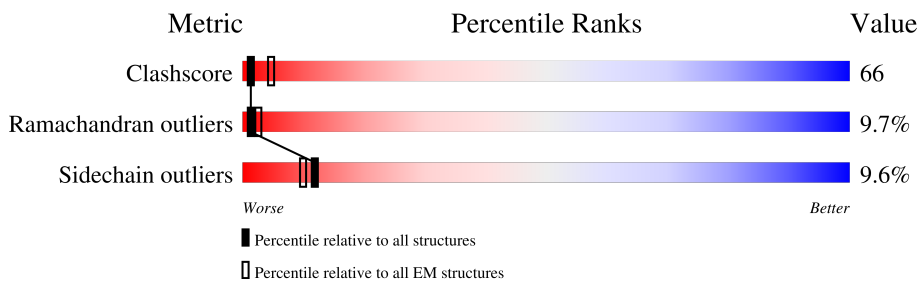
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.50 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  $\geq 3$ , 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	1299	84% 35% 39% 17% 8%
2	B	1027	77% 37% 36% 20% 6%
3	C	1196	76% 39% 37% 17% 8%
4	D	412	81% 31% 38% 20% 11%
4	E	412	71% 33% 39% 20% 8%
5	F	276	94% 23% 34% 30% 13%
5	G	276	95% 24% 35% 29% 13%
5	H	276	95% 25% 32% 30% 14%

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Mol	Chain	Length	Quality of chain			
5	L	276	95%			
			23%	35%	28%	14%
5	M	276	94%			
			24%	33%	29%	13%
5	N	276	100%			
			23%	35%	28%	13%
5	R	276	96%			
			22%	34%	30%	14%
5	S	276	93%			
			25%	32%	29%	14%
5	T	276	91%			
			22%	35%	30%	13%
5	Y	276	100%			
			25%	32%	29%	13%
6	I	639	89%			
			27%	38%	24%	10%
6	J	639	85%			
			27%	40%	23%	10%
6	K	639	86%			
			28%	38%	23%	10%
6	O	639	89%			
			27%	41%	23%	10%
6	P	639	90%			
			28%	37%	24%	11%
6	Q	639	89%			
			28%	38%	24%	10%
6	U	639	88%			
			27%	38%	24%	10%
6	V	639	88%			
			27%	38%	25%	10%
6	W	639	86%			
			27%	39%	24%	10%
6	X	639	90%			
			34%	39%	21%	6%

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 101798 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 VP1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1299	Total	C	N	O	S	0	0
			9989	6395	1700	1866	28		

- Molecule 2 is a protein called VP3A.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1027	Total	C	N	O	S	0	0
			7935	5067	1359	1462	47		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	455	GLU	GLN	conflict	UNP Q9E3V8

- Molecule 3 is a protein called VP3B.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	1196	Total	C	N	O	S	0	0
			9154	5805	1575	1722	52		

- Molecule 4 is a protein called Core protein VP6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	412	Total	C	N	O	S	0	0
			3145	2013	545	571	16		
4	E	412	Total	C	N	O	S	0	0
			3145	2013	545	571	16		

- Molecule 5 is a protein called Outer capsid VP7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		

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Mol	Chain	Residues	Atoms					AltConf	Trace
5	G	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	H	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	L	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	M	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	N	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	R	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	S	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	T	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		
5	Y	276	Total	C	N	O	S	0	0
			2085	1288	378	402	17		

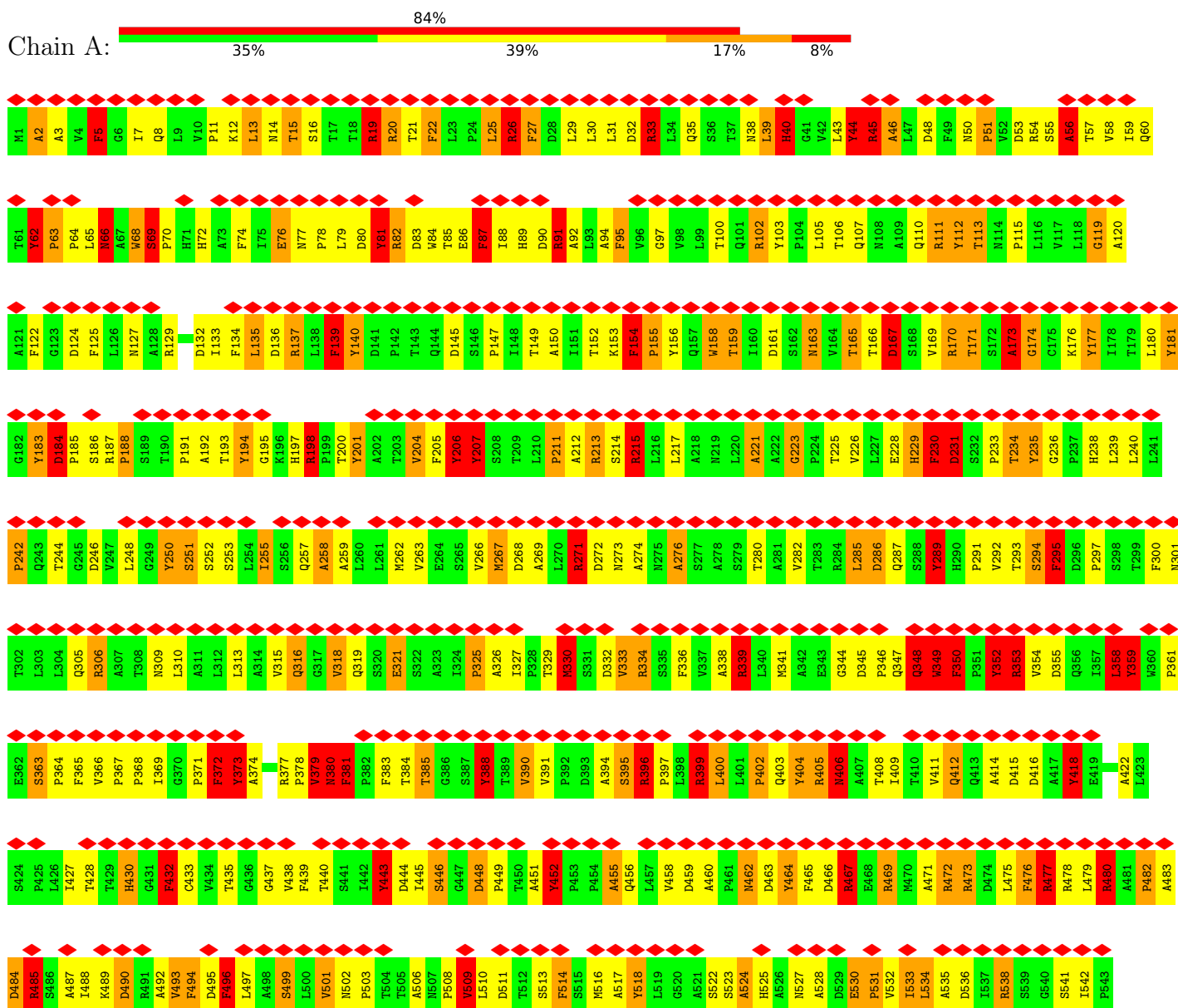
- Molecule 6 is a protein called Outer capsid VP5.

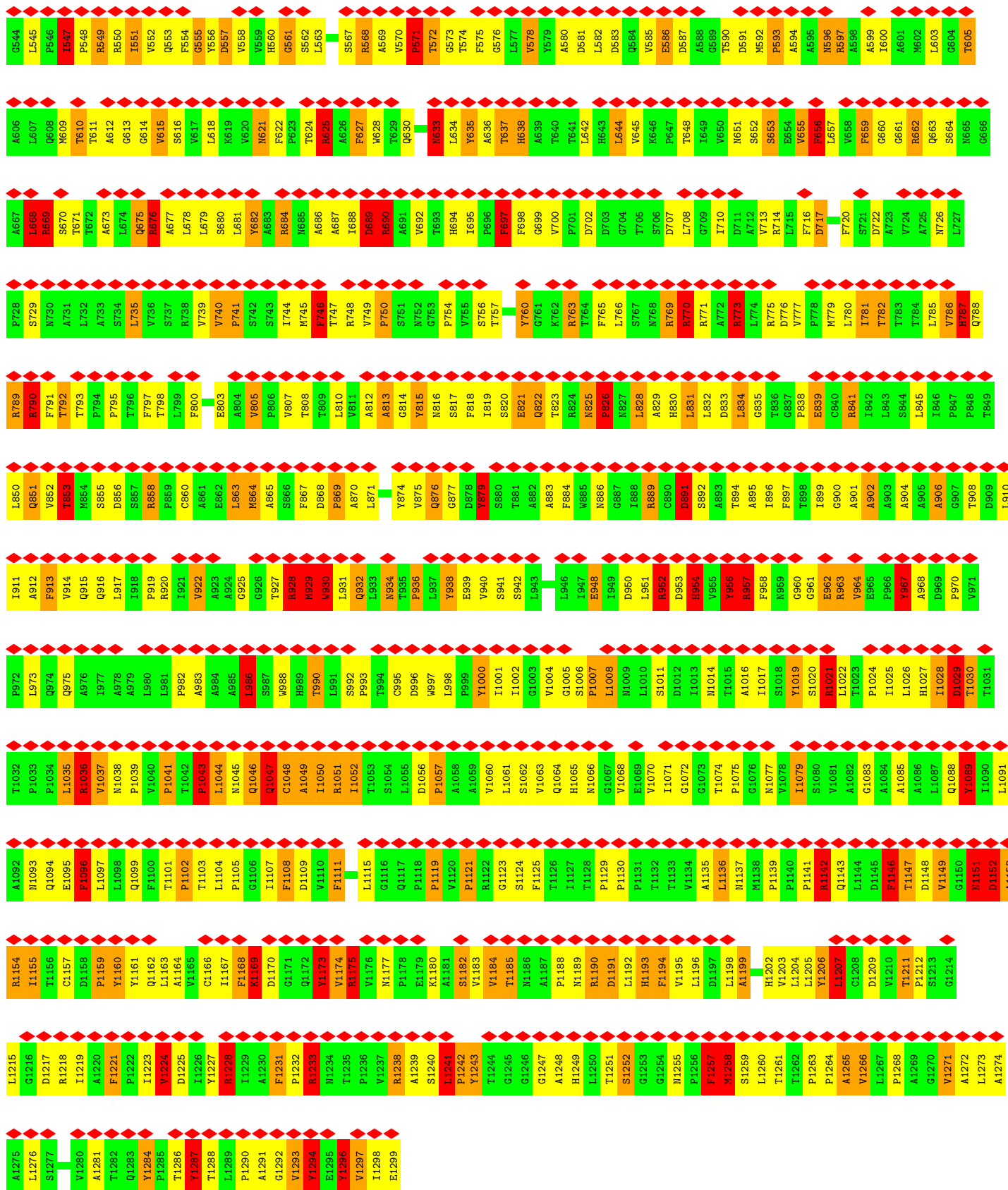
Mol	Chain	Residues	Atoms					AltConf	Trace
6	I	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	J	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	K	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	O	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	P	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	Q	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	U	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	V	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	W	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		
6	X	639	Total	C	N	O	S	0	0
			4758	3012	801	927	18		

### 3 Residue-property plots

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

#### • Molecule 1: VP1



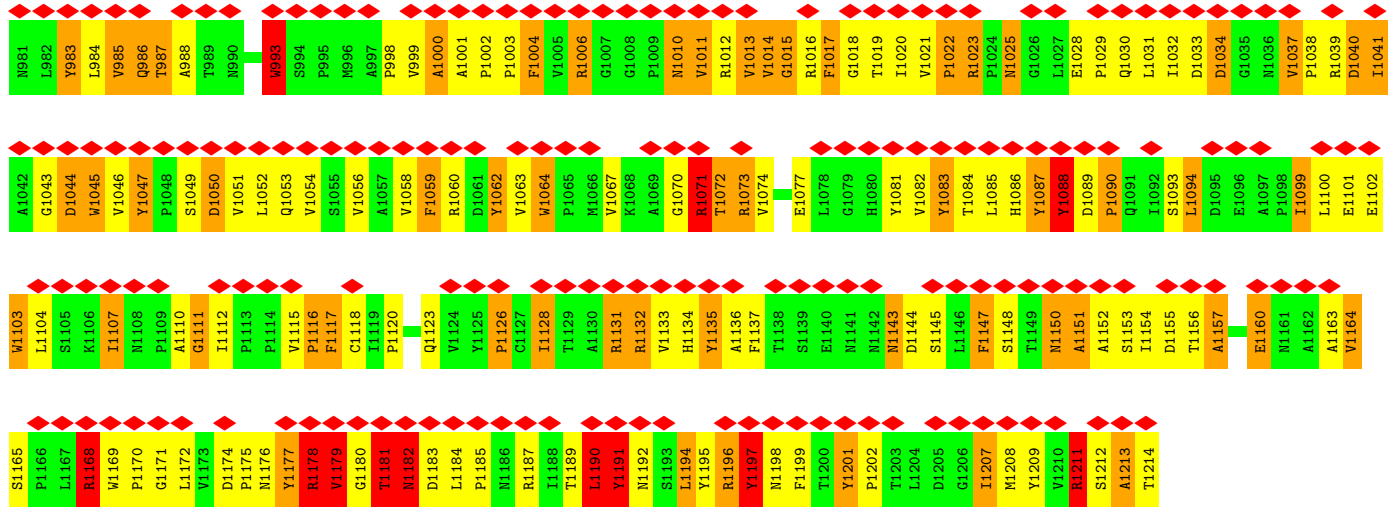


• Molecule 2: VP3A

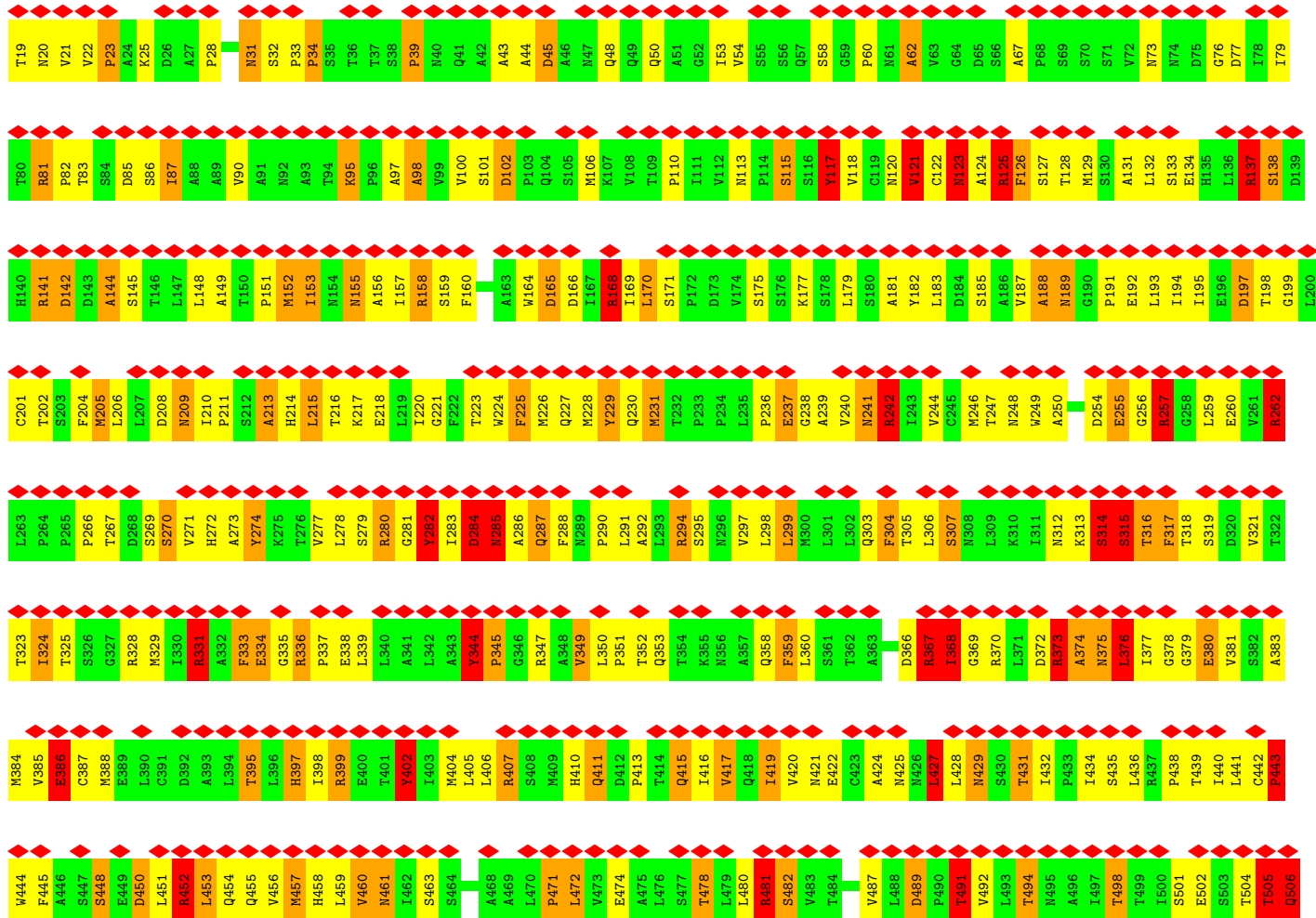
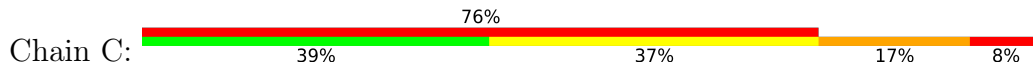


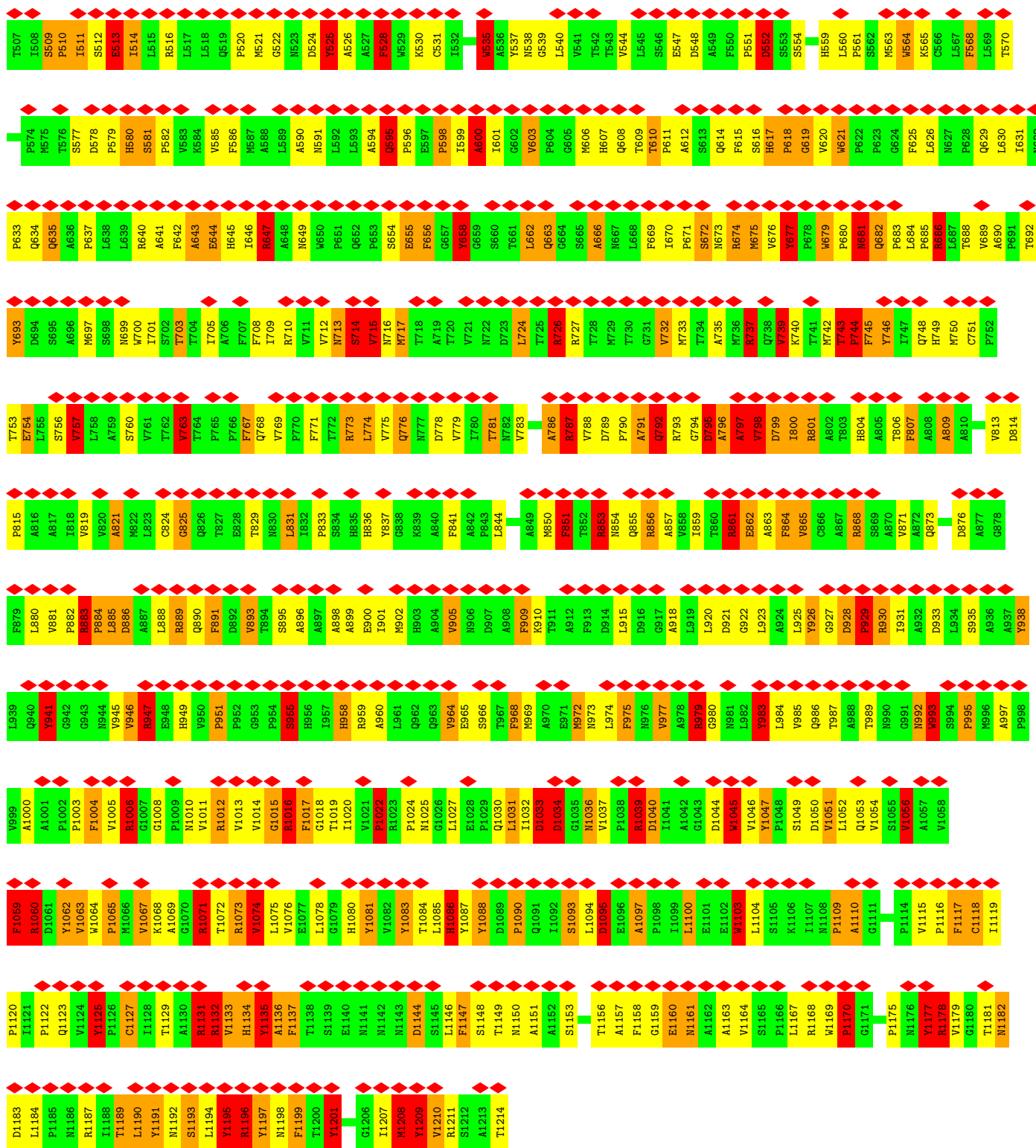
A188	A189	A190	A191	A192	A193	A194	A195	A196	A197	A198	A199	A200	A201	A202	A203	A204	A205	A206	A207	A208	A209	A210	A211	A212	A213	A214	A215	A216	A217	A218	A219	A220	A221	A222	A223	A224	A225	A226	A227	A228	A229	A230	A231	A232	A233	A234	A235	A236	A237	A238	A239	A240	A241	A242	A243	A244	A245	A246	A247	A248	A249	A250	A251	A252	A253	A254	A255	A256	A257	A258	A259	A260	A261	A262	A263	A264	A265	A266	A267	A268	A269	A270	A271	A272	A273	A274	A275	A276	A277	A278	A279	A280	A281	A282	A283	A284	A285	A286	A287	A288	A289	A290	A291	A292	A293	A294	A295	A296	A297	A298	A299	A300	A301	A302	A303	A304	A305	A306	A307	A308	A309	A310	A311	A312	A313	A314	A315	A316	A317	A318	A319	A320	A321	A322	A323	A324	A325	A326	A327	A328	A329	A330	A331	A332	A333	A334	A335	A336	A337	A338	A339	A340	A341	A342	A343	A344	A345	A346	A347	A348	A349	A350	A351	A352	A353	A354	A355	A356	A357	A358	A359	A360	A361	A362	A363	A364	A365	A366	A367	A368	A369	A370	A371	A372	A373	A374	A375	A376	A377	A378	A379	A380	A381	A382	A383	A384	A385	A386	A387	A388	A389	A390	A391	A392	A393	A394	A395	A396	A397	A398	A399	A400	A401	A402	A403	A404	A405	A406	A407	A408	A409	A410	A411	A412	A413	A414	A415	A416	A417	A418	A419	A420	A421	A422	A423	A424	A425	A426	A427	A428	A429	A430	A431	A432	A433	A434	A435	A436	A437	A438	A439	A440	A441	A442	A443	A444	A445	A446	A447	A448	A449	A450	A451	A452	A453	A454	A455	A456	A457	A458	A459	A460	A461	A462	A463	A464	A465	A466	A467	A468	A469	A470	A471	A472	A473	A474	A475	A476	A477	A478	A479	A480	A481	A482	A483	A484	A485	A486	A487	A488	A489	A490	A491	A492	A493	A494	A495	A496	A497	A498	A499	A500	A501	A502	A503	A504	A505	A506	A507	A508	A509	A510	A511	A512	A513	A514	A515	A516	A517	A518	A519	A520	A521	A522	A523	A524	A525	A526	A527	A528	A529	A530	A531	A532	A533	A534	A535	A536	A537	A538	A539	A540	A541	A542	A543	A544	A545	A546	A547	A548	A549	A550	A551	A552	A553	A554	A555	A556	A557	A558	A559	A560	A561	A562	A563	A564	A565	A566	A567	A568	A569	A570	A571	A572	A573	A574	A575	A576	A577	A578	A579	A580	A581	A582	A583	A584	A585	A586	A587	A588	A589	A590	A591	A592	A593	A594	A595	A596	A597	A598	A599	A600	A601	A602	A603	A604	A605	A606	A607	A608	A609	A610	A611	A612	A613	A614	A615	A616	A617	A618	A619	A620	A621	A622	A623	A624	A625	A626	A627	A628	A629	A630	A631	A632	A633	A634	A635	A636	A637	A638	A639	A640	A641	A642	A643	A644	A645	A646	A647	A648	A649	A650	A651	A652	A653	A654	A655	A656	A657	A658	A659	A660	A661	A662	A663	A664	A665	A666	A667	A668	A669	A670	A671	A672	A673	A674	A675	A676	A677	A678	A679	A680	A681	A682	A683	A684	A685	A686	A687	A688	A689	A690	A691	A692	A693	A694	A695	A696	A697	A698	A699	A700	A701	A702	A703	A704	A705	A706	A707	A708	A709	A710	A711	A712	A713	A714	A715	A716	A717	A718	A719	A720	A721	A722	A723	A724	A725	A726	A727	A728	A729	A730	A731	A732	A733	A734	A735	A736	A737	A738	A739	A740	A741	A742	A743	A744	A745	A746	A747	A748	A749	A750	A751	A752	A753	A754	A755	A756	A757	A758	A759	A760	A761	A762	A763	A764	A765	A766	A767	A768	A769	A770	A771	A772	A773	A774	A775	A776	A777	A778	A779	A780	A781	A782	A783	A784	A785	A786	A787	A788	A789	A790	A791	A792	A793	A794	A795	A796	A797	A798	A799	A800	A801	A802	A803	A804	A805	A806	A807	A808	A809	A810	A811	A812	A813	A814	A815	A816	A817	A818	A819	A820	A821	A822	A823	A824	A825	A826	A827	A828	A829	A830	A831	A832	A833	A834	A835	A836	A837	A838	A839	A840	A841	A842	A843	A844	A845	A846	A847	A848	A849	A850	A851	A852	A853	A854	A855	A856	A857	A858	A859	A860	A861	A862	A863	A864	A865	A866	A867	A868	A869	A870	A871	A872	A873	A874	A875	A876	A877	A878	A879	A880	A881	A882	A883	A884	A885	A886	A887	A888	A889	A890	A891	A892	A893	A894	A895	A896	A897	A898	A899	A900	A901	A902	A903	A904	A905	A906	A907	A908	A909	A910	A911	A912	A913	A914	A915	A916	A917	A918	A919	A920	A921	A922	A923	A924	A925	A926	A927	A928	A929	A930	A931	A932	A933	A934	A935	A936	A937	A938	A939	A940	A941	A942	A943	A944	A945	A946	A947	A948	A949	A950	A951	A952	A953	A954	A955	A956	A957	A958	A959	A960	A961	A962	A963	A964	A965	A966	A967	A968	A969	A970	A971	A972	A973	A974	A975	A976	A977	A978	A979	A980	A981	A982	A983	A984	A985	A986	A987	A988	A989	A990	A991	A992	A993	A994	A995	A996	A997	A998	A999	A1000
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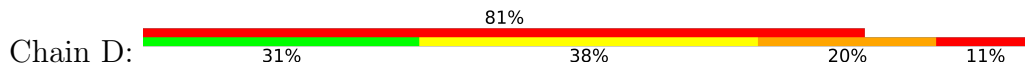


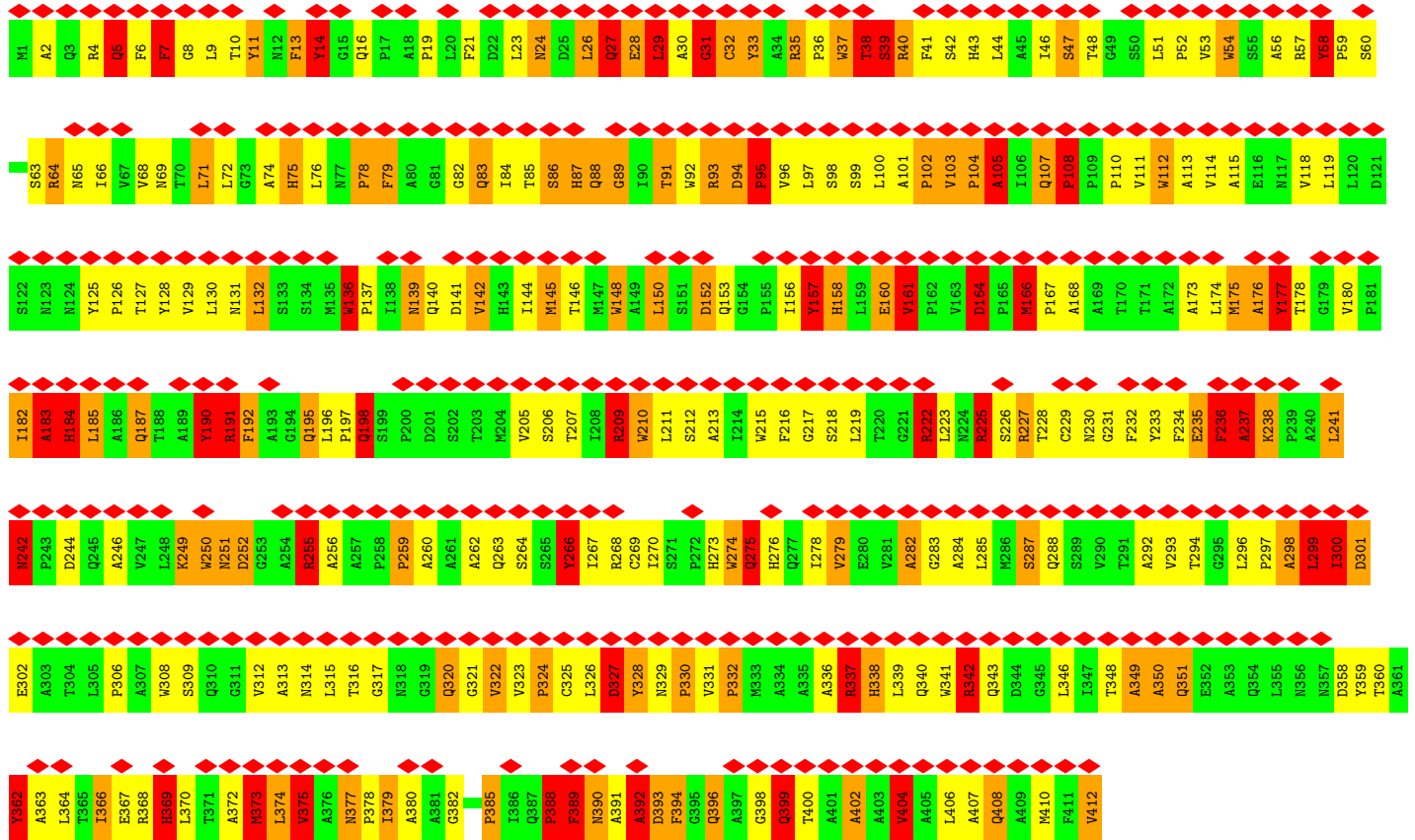
• Molecule 3: VP3B



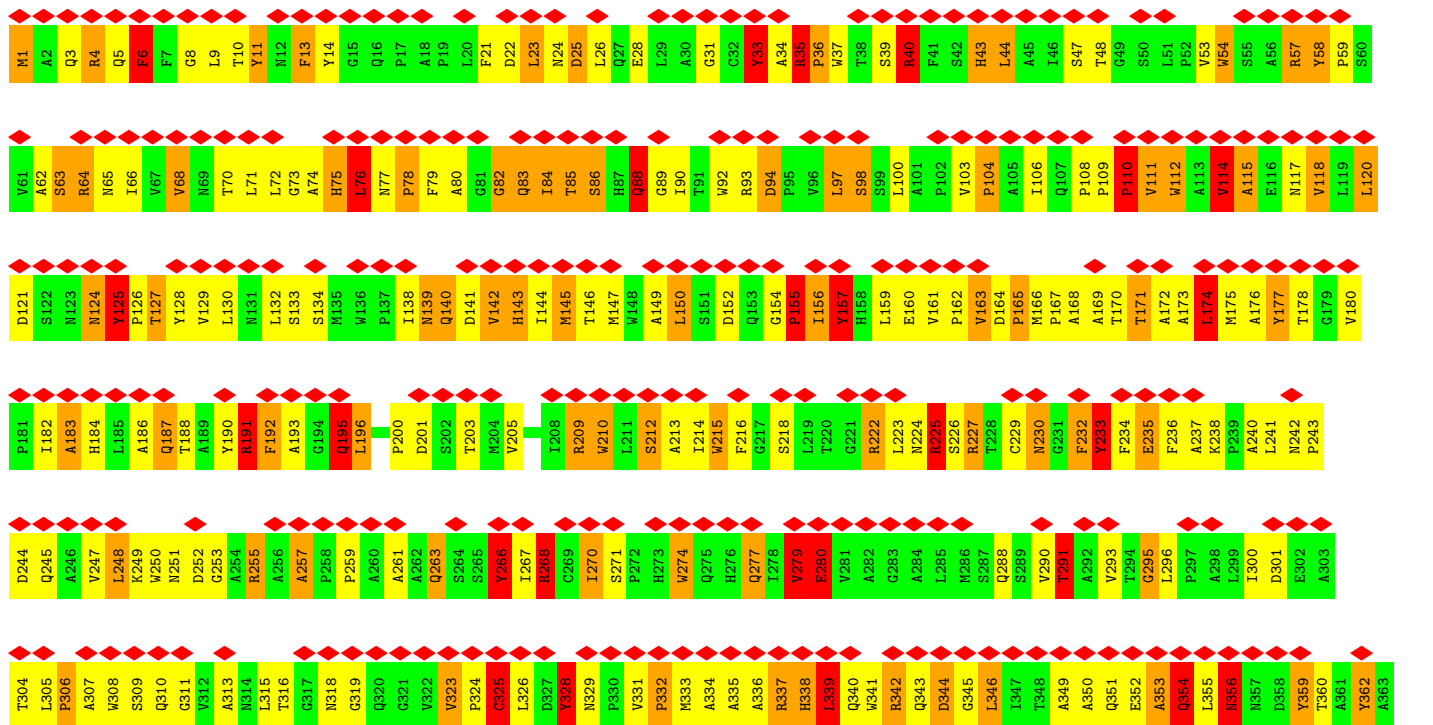


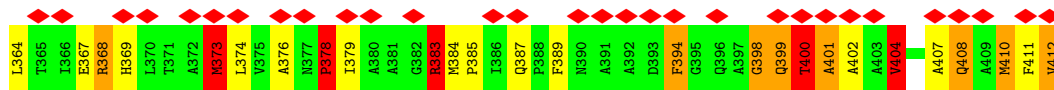
● Molecule 4: Core protein VP6



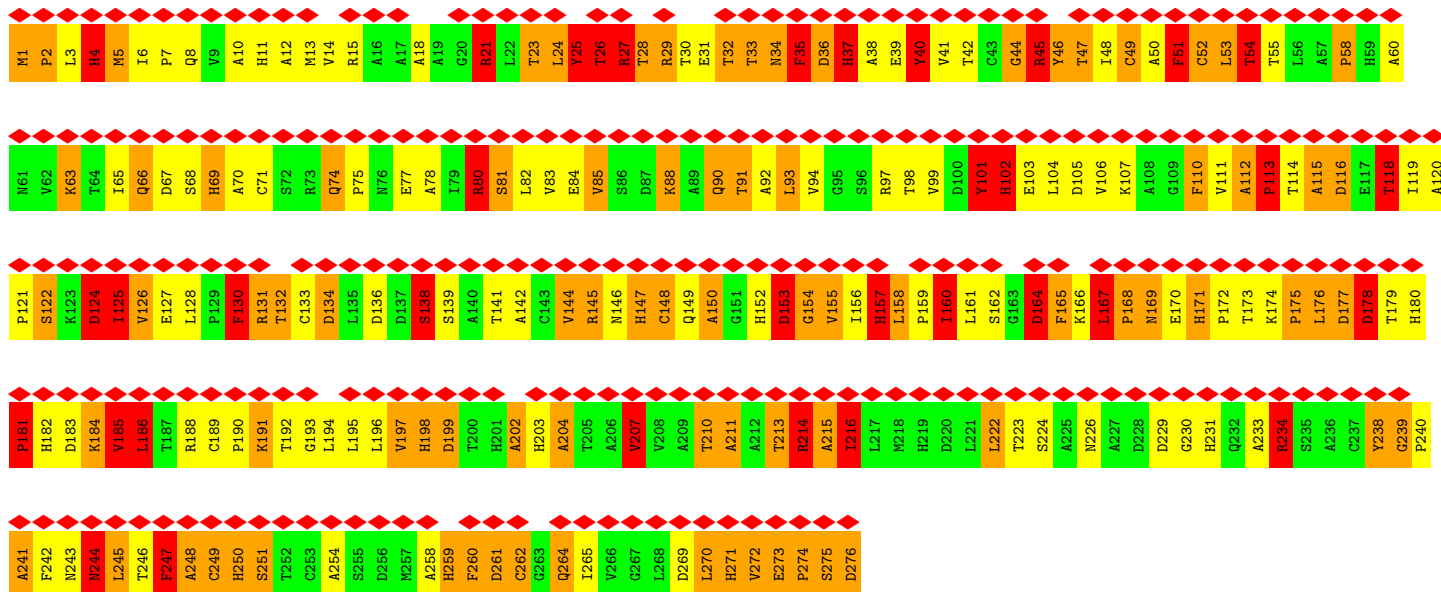
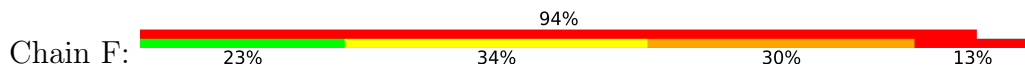


● Molecule 4: Core protein VP6

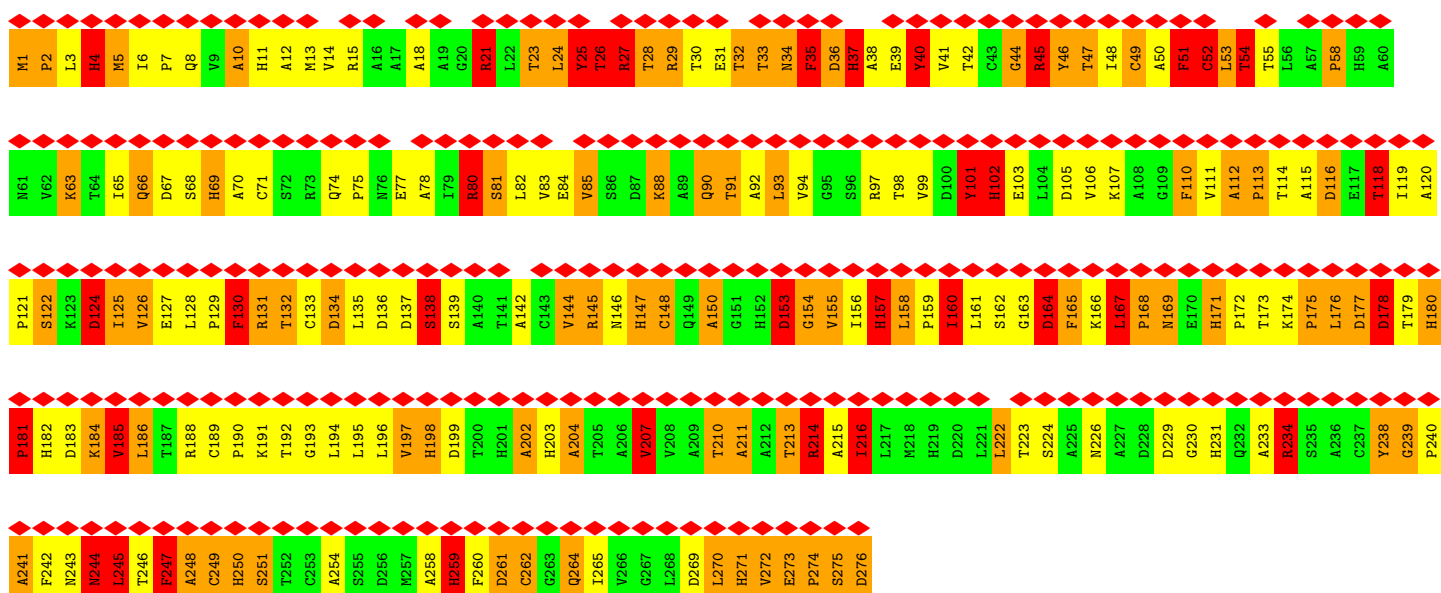
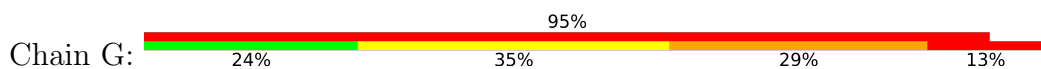




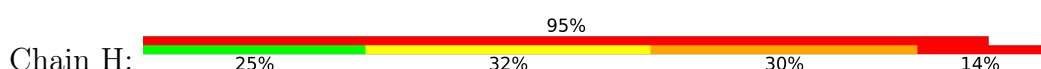
• Molecule 5: Outer capsid VP7

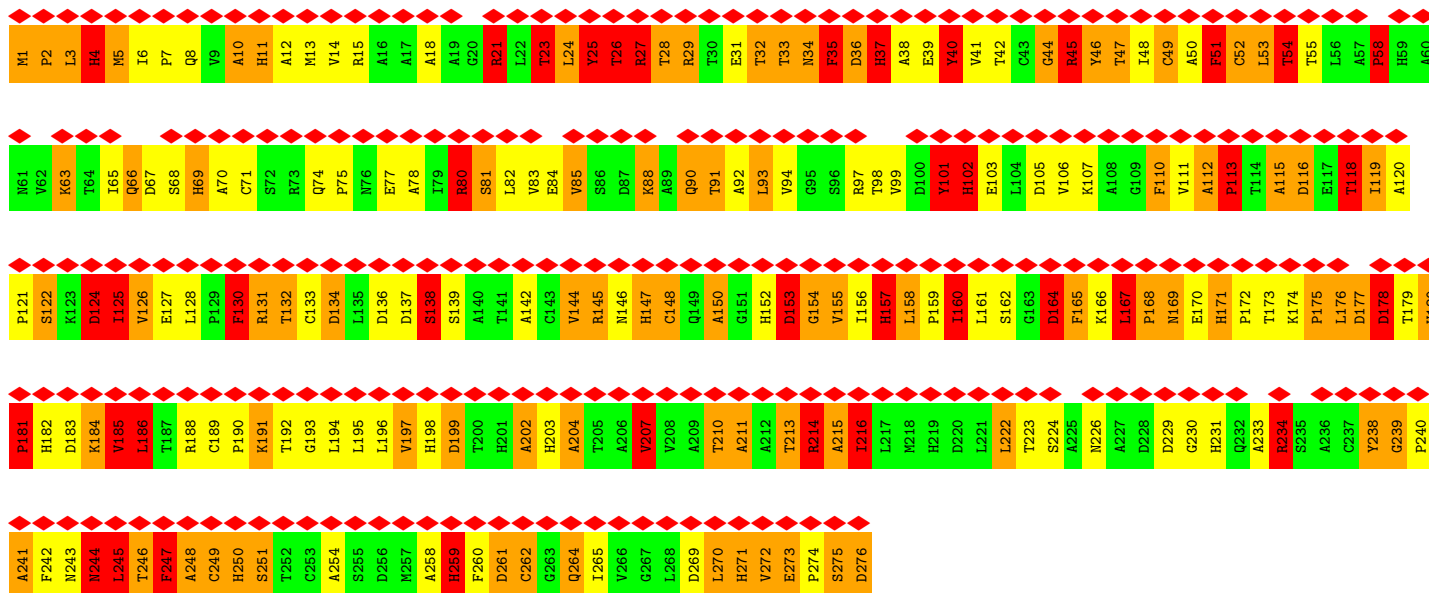


• Molecule 5: Outer capsid VP7

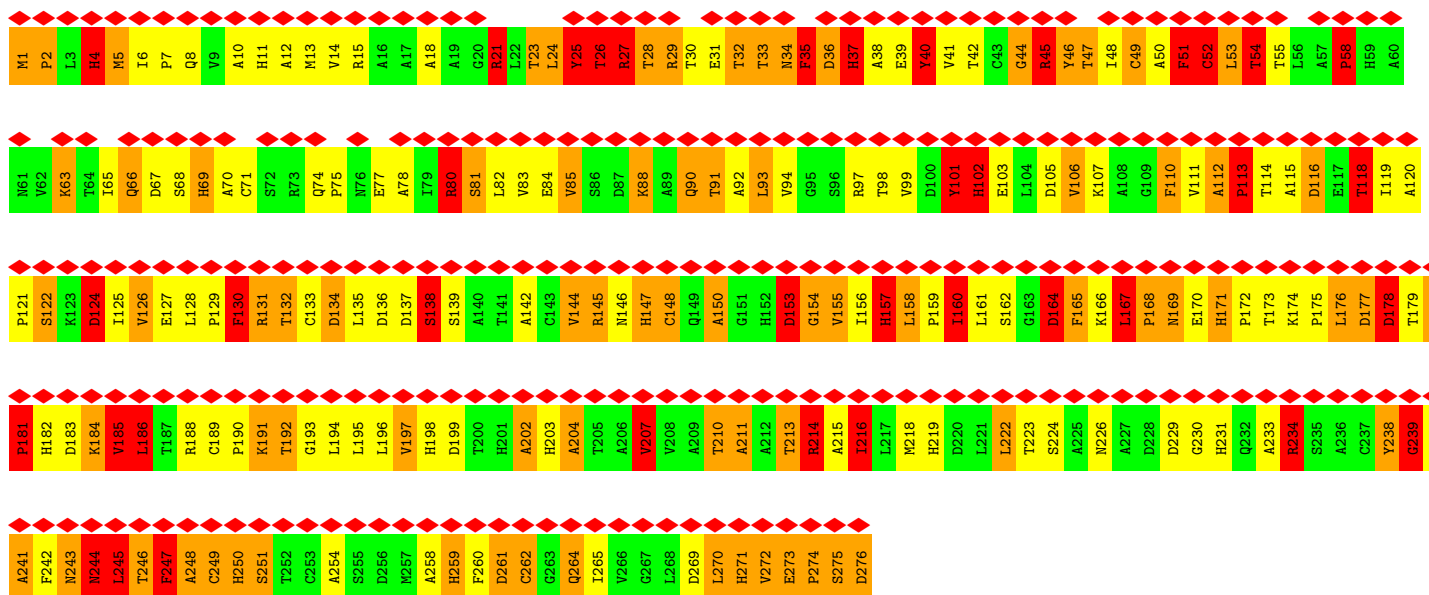
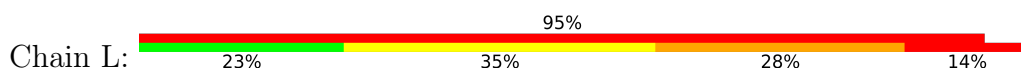


• Molecule 5: Outer capsid VP7

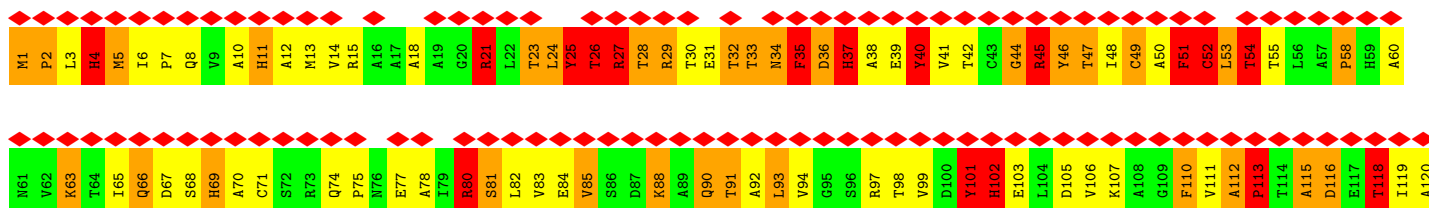
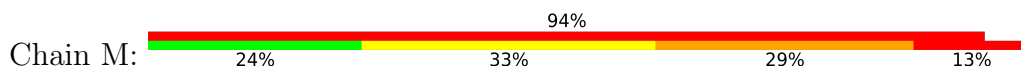




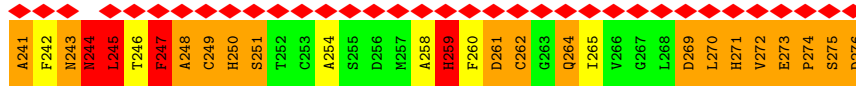
• Molecule 5: Outer capsid VP7



• Molecule 5: Outer capsid VP7

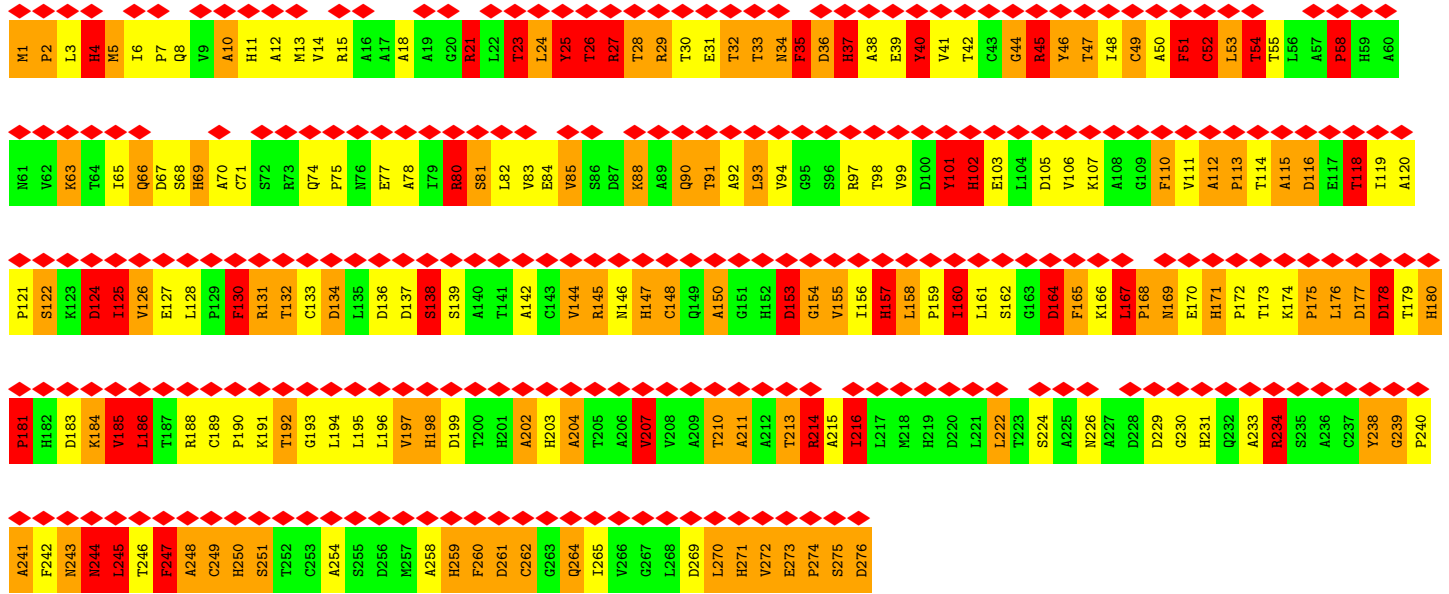






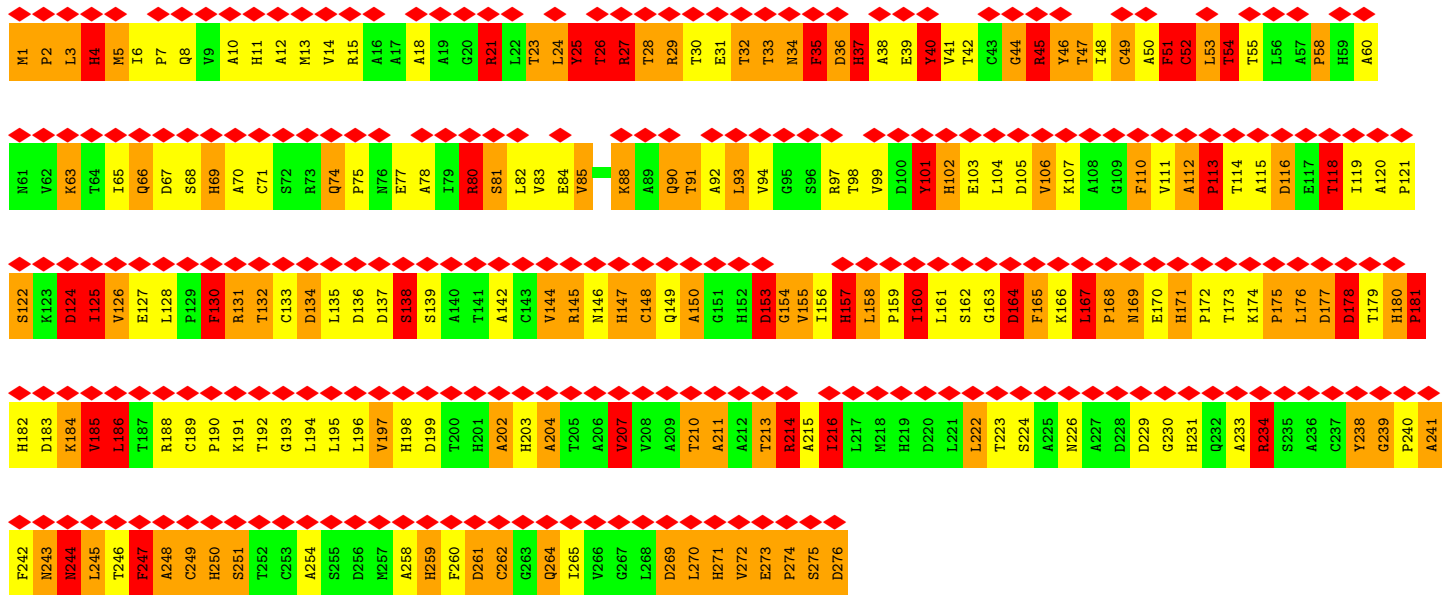
• Molecule 5: Outer capsid VP7

Chain S:



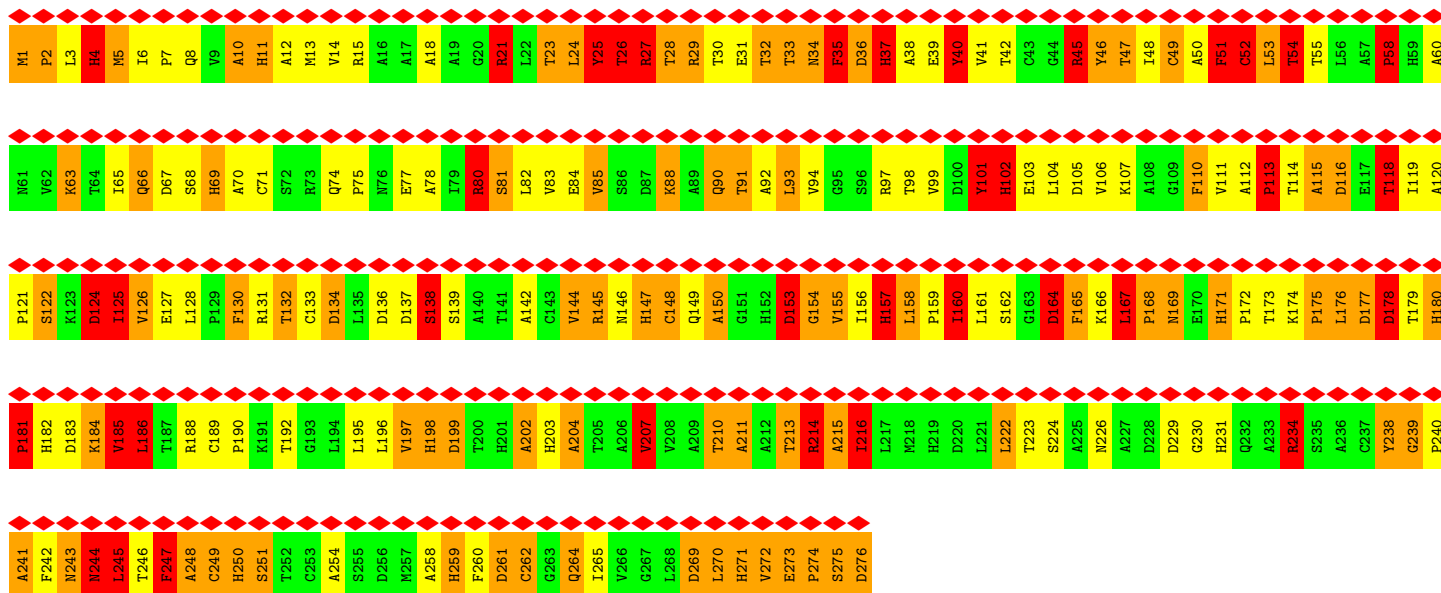
• Molecule 5: Outer capsid VP7

Chain T:

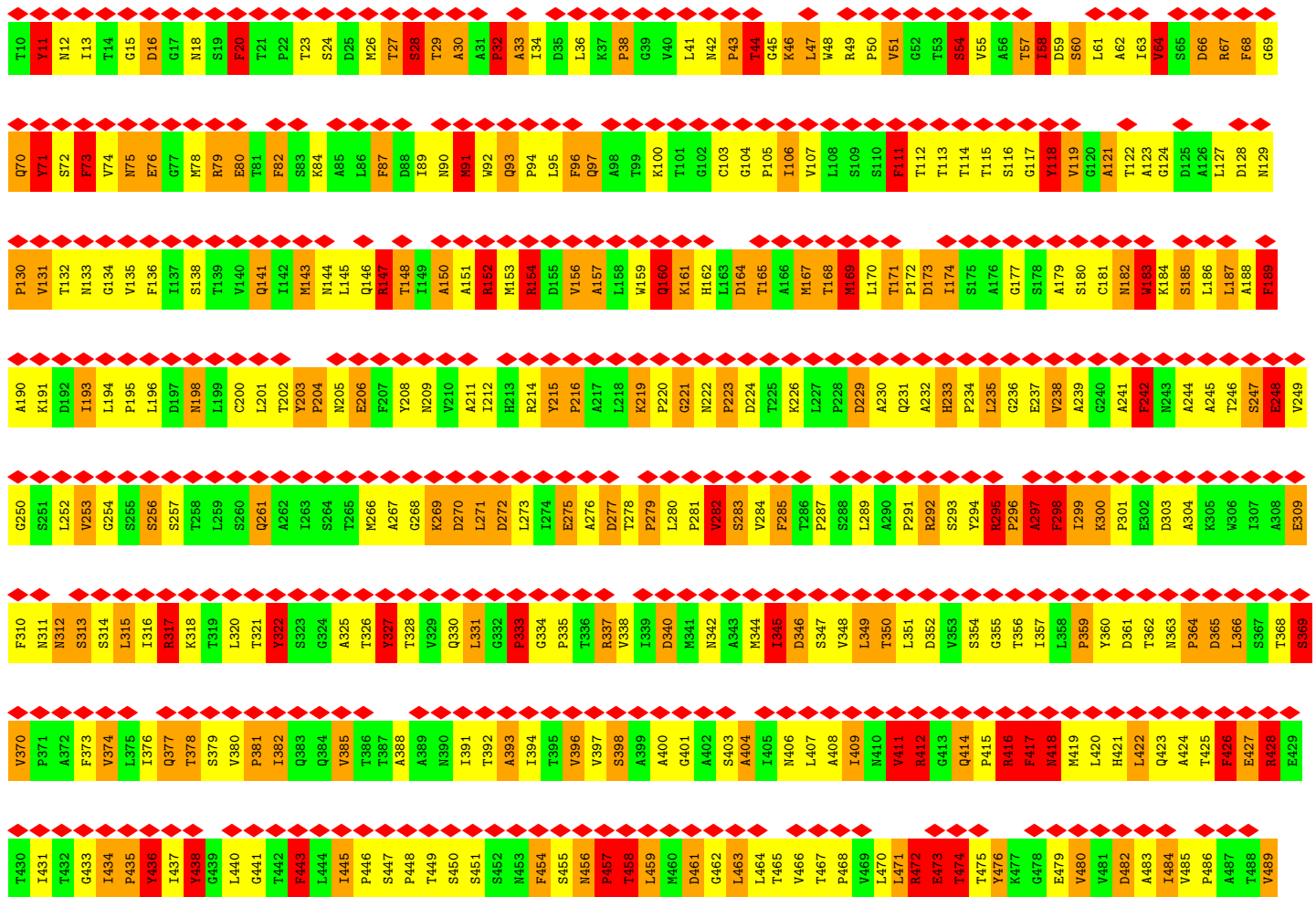
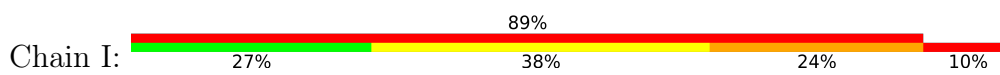


• Molecule 5: Outer capsid VP7

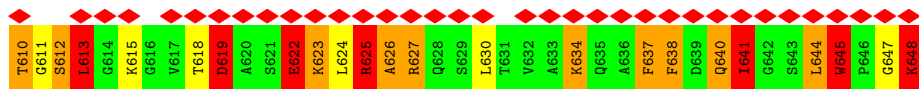
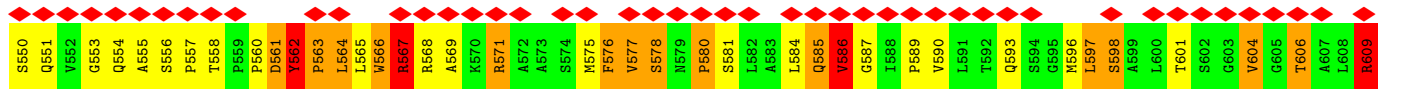
Chain Y:



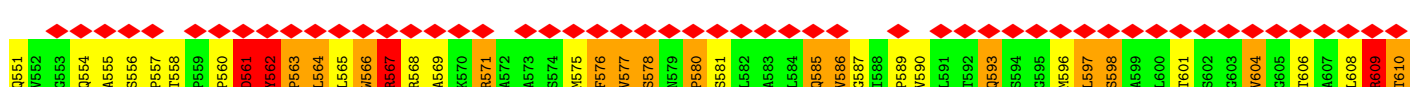
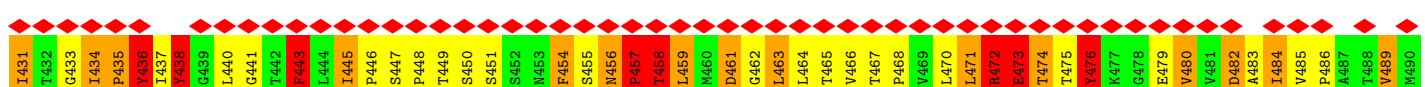
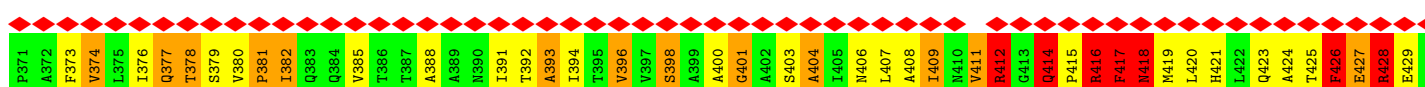
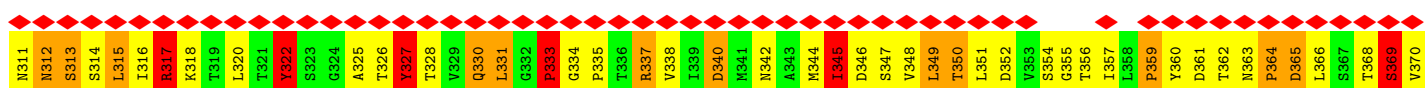
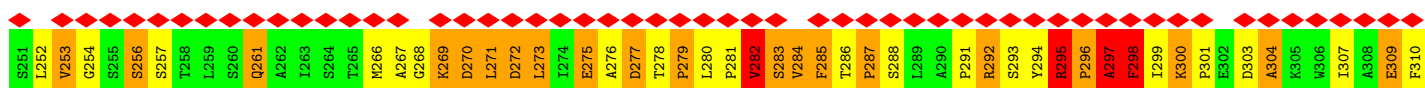
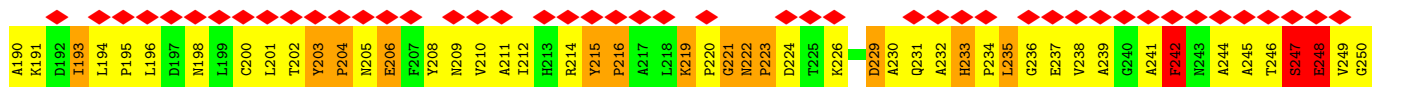
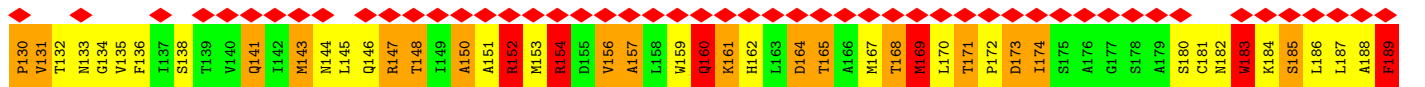
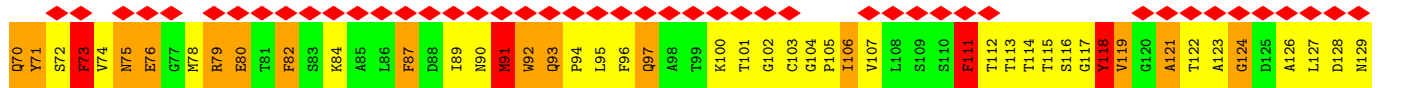
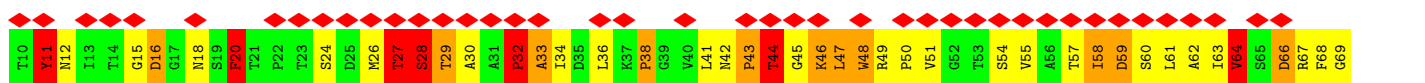
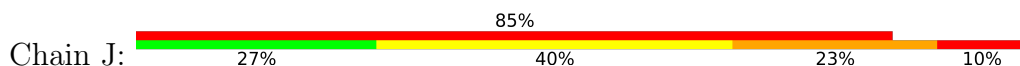
• Molecule 6: Outer capsid VP5

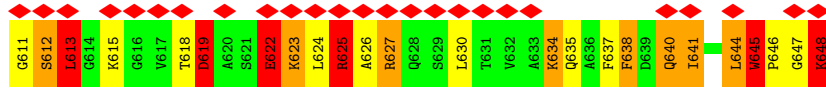




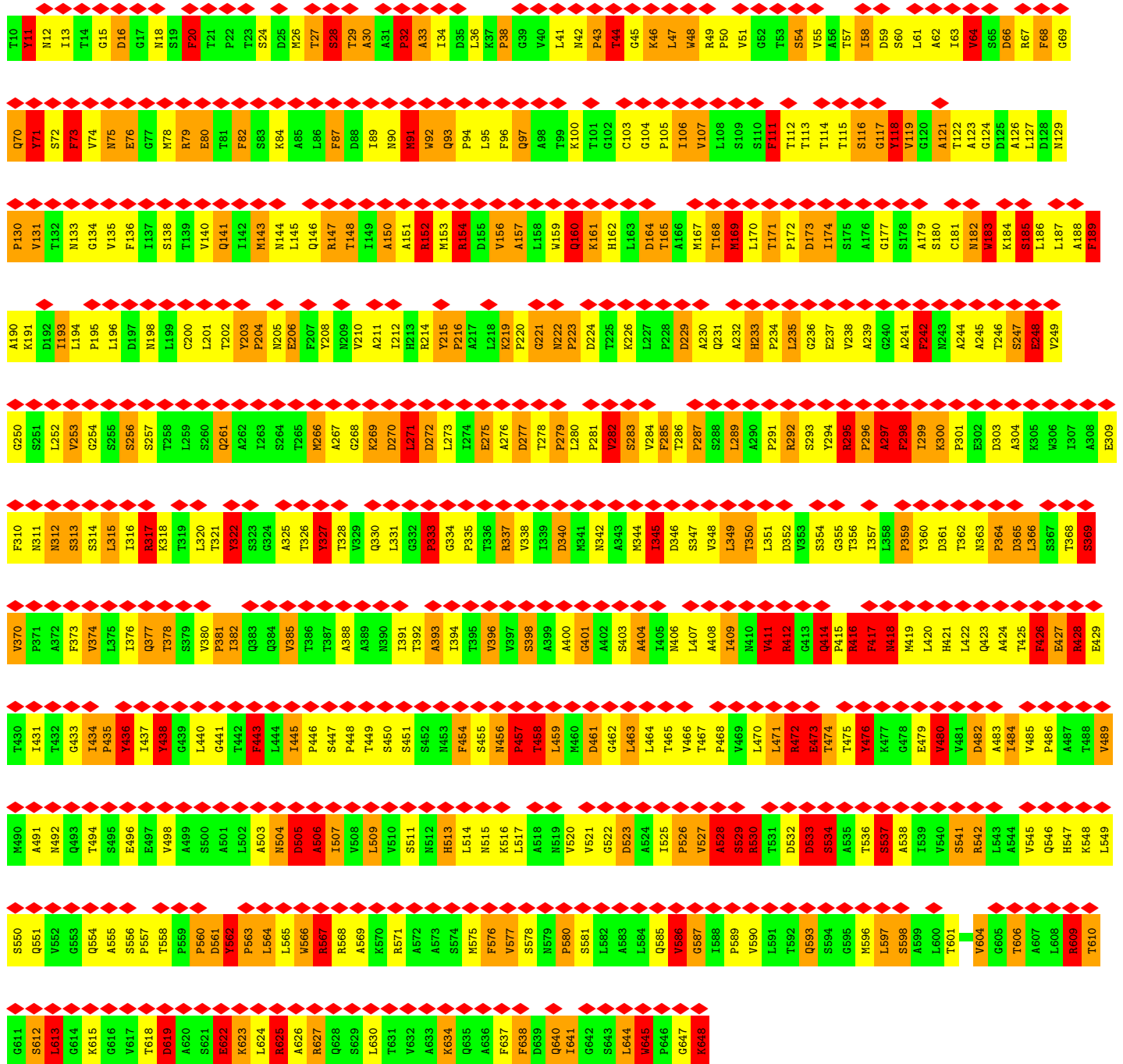
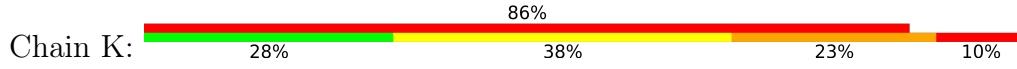


• Molecule 6: Outer capsid VP5

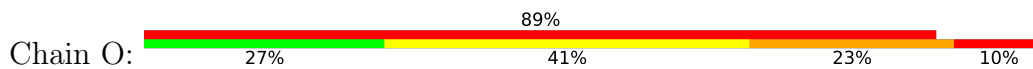


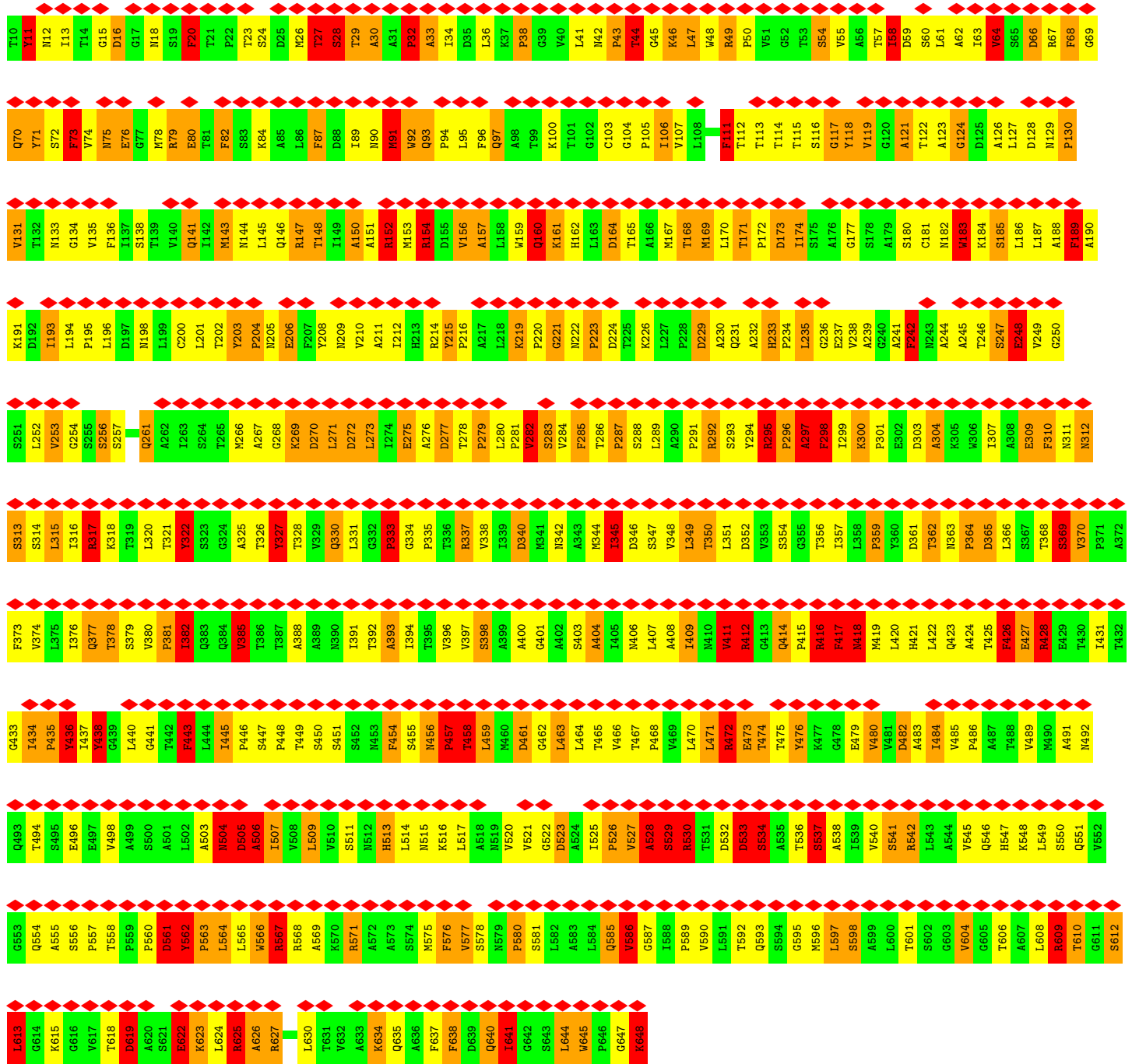


• Molecule 6: Outer capsid VP5

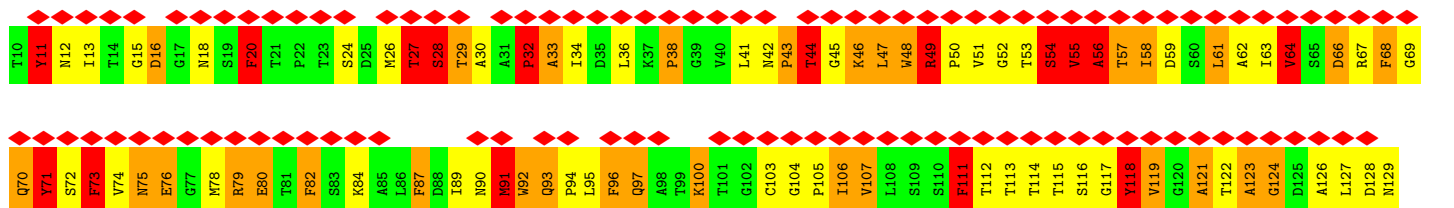
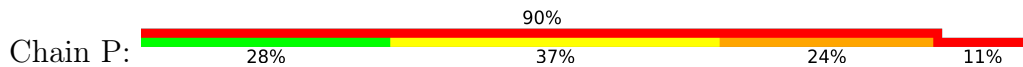


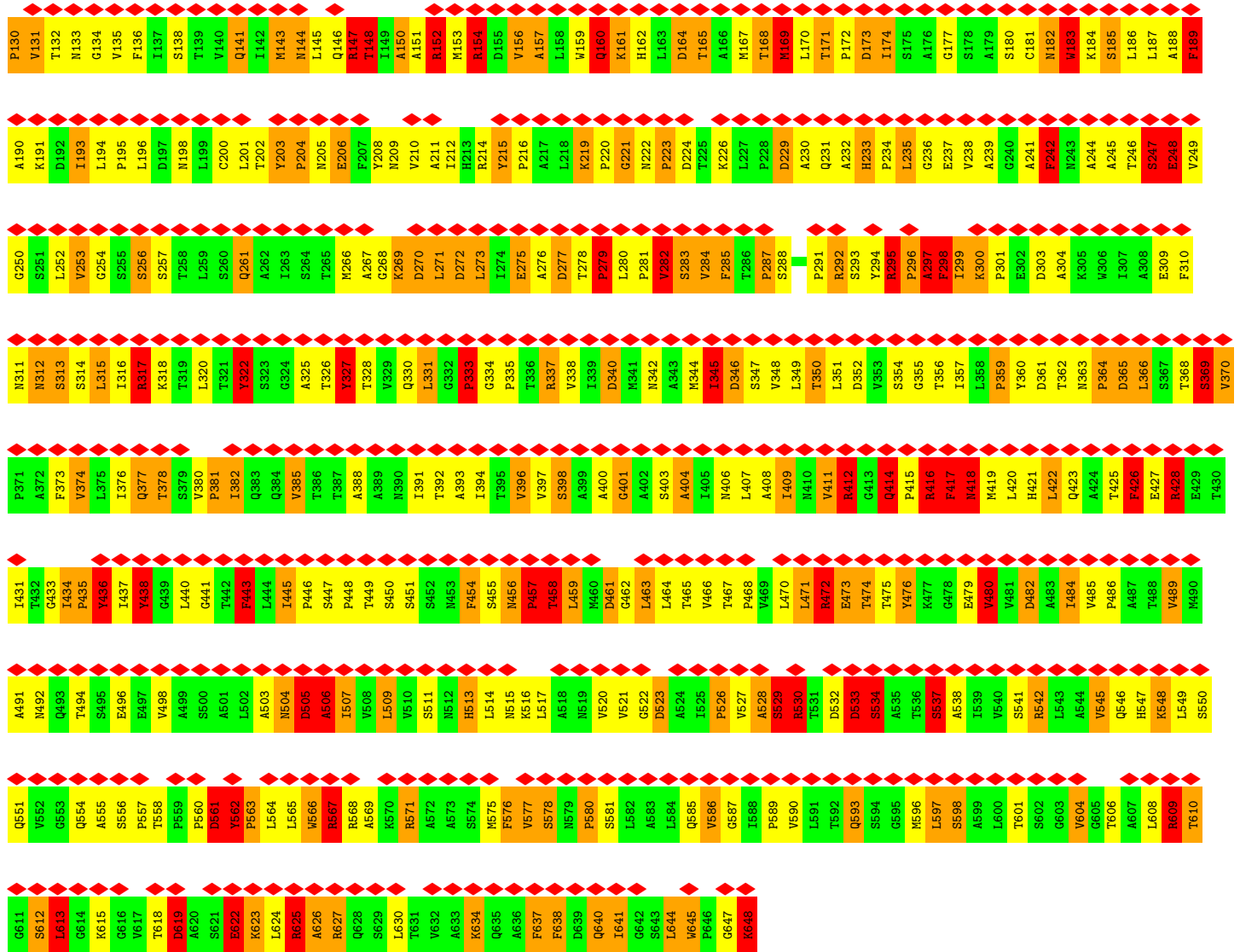
• Molecule 6: Outer capsid VP5



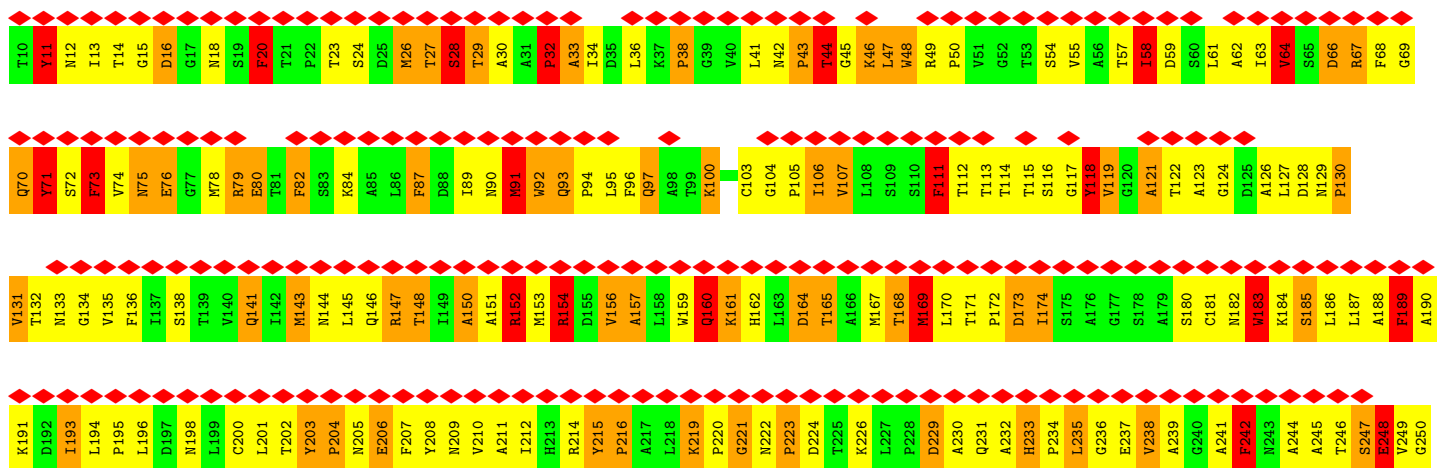
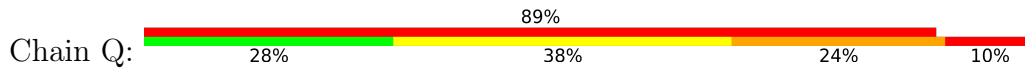


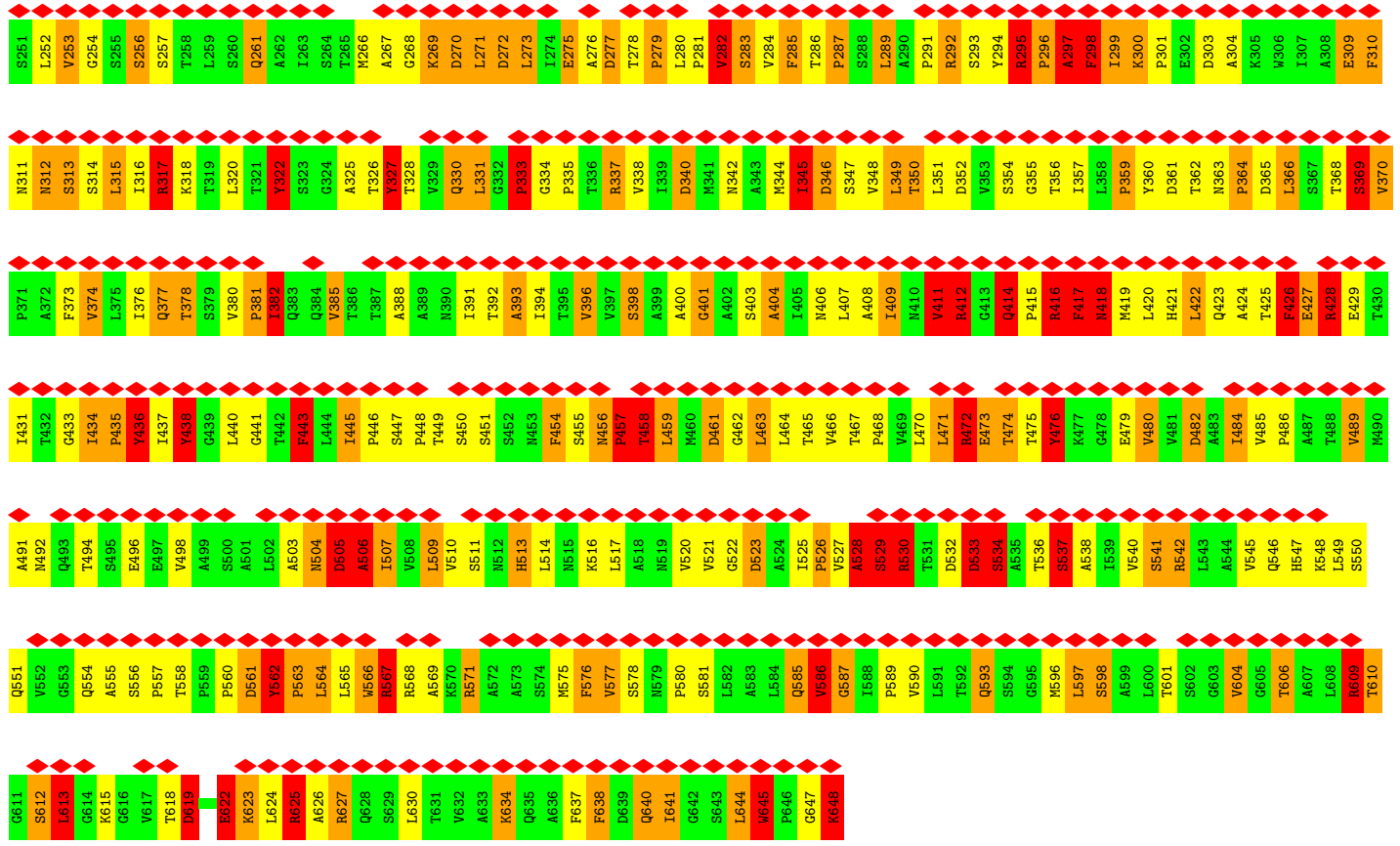
● Molecule 6: Outer capsid VP5



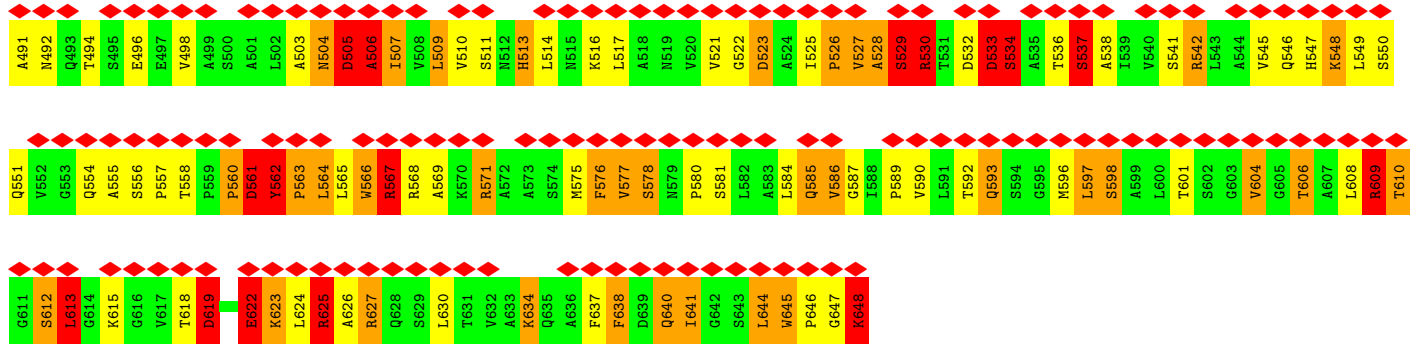


• Molecule 6: Outer capsid VP5

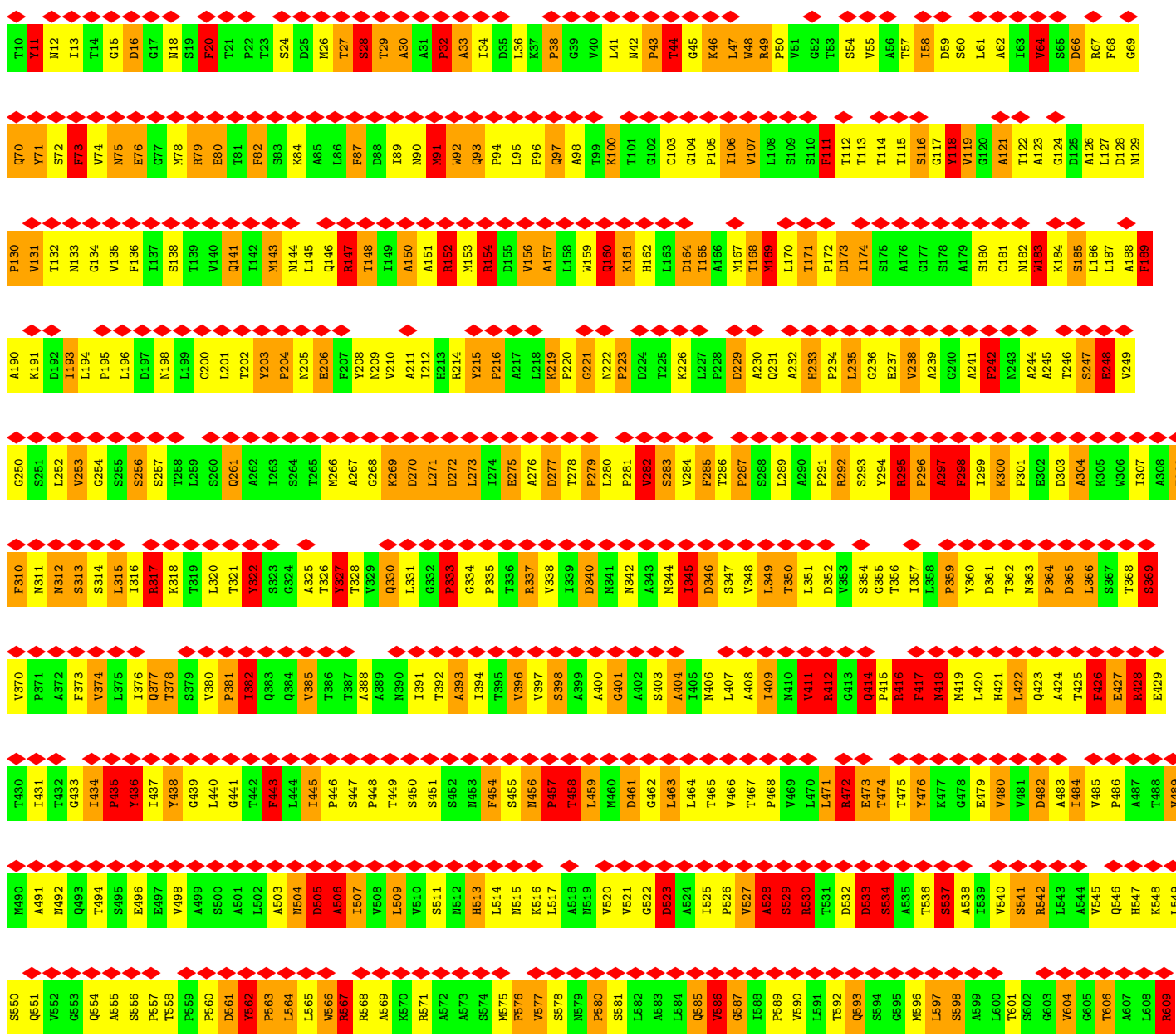
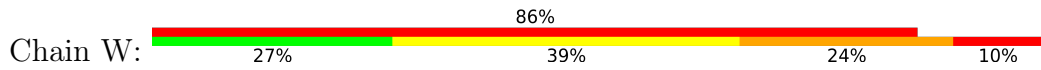


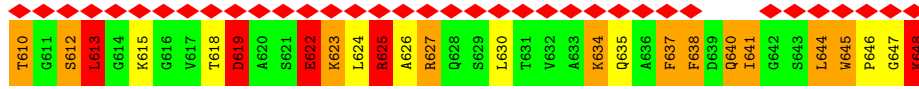




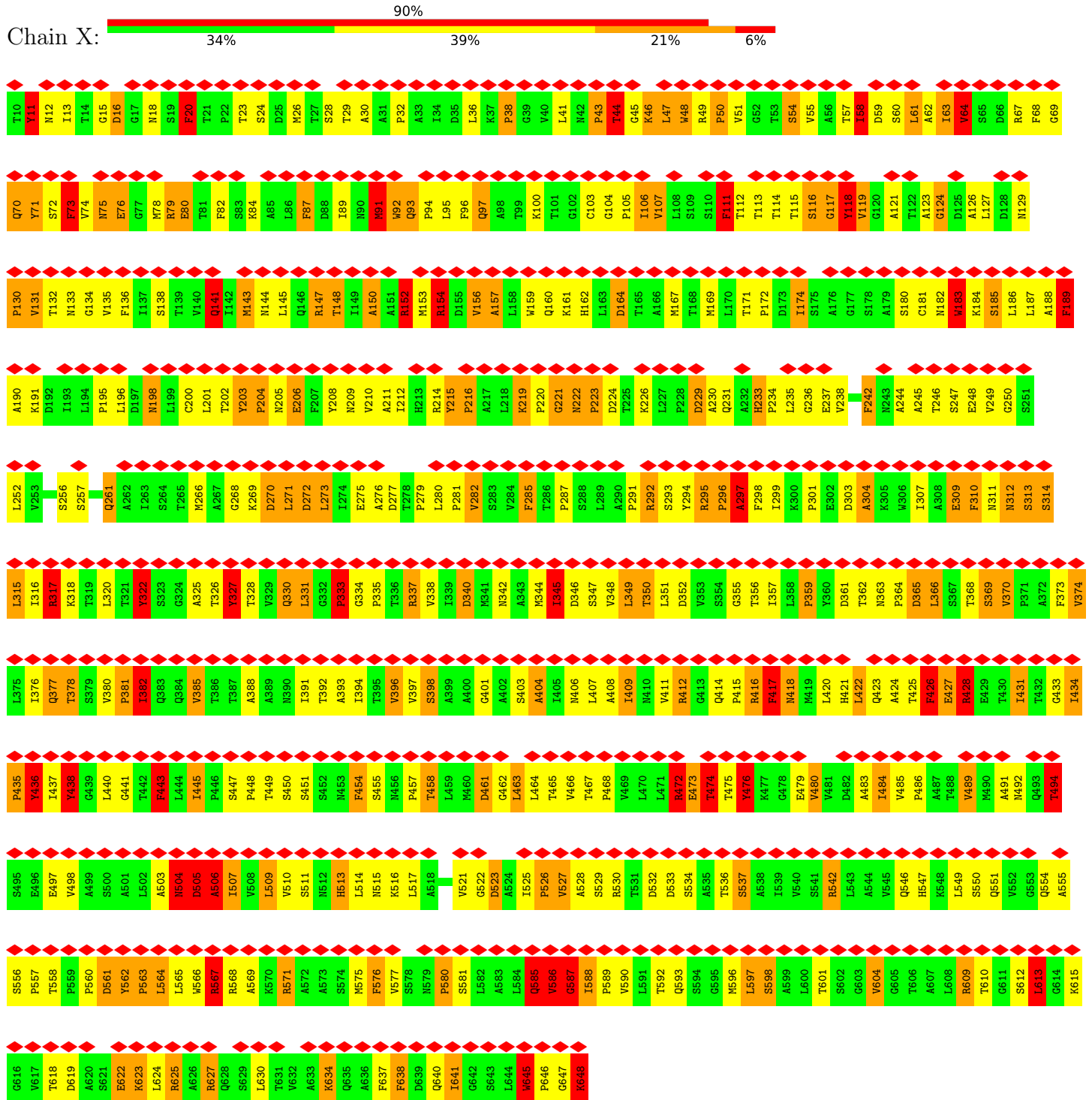


● Molecule 6: Outer capsid VP5





• Molecule 6: Outer capsid VP5





## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	15000	Depositor
Resolution determination method	Not provided	
CTF correction method	Fully corrected. See Zhou et al., 1999, J. Virol. 73, 3210-3218	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	20	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2300	Depositor
Magnification	154380	Depositor
Image detector	GENERIC CCD	Depositor
Maximum map value	6.460	Depositor
Minimum map value	-8.591	Depositor
Average map value	0.026	Depositor
Map value standard deviation	0.721	Depositor
Recommended contour level	1.4	Depositor
Map size (Å)	901.645, 901.645, 450.822	wwPDB
Map dimensions	929, 929, 465	wwPDB
Map angles (°)	90, 90, 90	wwPDB
Pixel spacing (Å)	0.9716, 0.9716, 0.9716	Depositor

## 5 Model quality i

### 5.1 Standard geometry i

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.56	0/10259	2.41	538/14091 (3.8%)
2	B	0.55	0/8142	2.55	420/11160 (3.8%)
3	C	0.55	0/9383	2.56	471/12866 (3.7%)
4	D	0.55	0/3240	2.54	172/4453 (3.9%)
4	E	0.56	0/3240	2.44	181/4453 (4.1%)
5	F	0.50	0/2132	2.40	115/2912 (3.9%)
5	G	0.50	0/2132	2.41	113/2912 (3.9%)
5	H	0.50	0/2132	2.40	116/2912 (4.0%)
5	L	0.50	0/2132	2.40	116/2912 (4.0%)
5	M	0.51	0/2132	2.39	114/2912 (3.9%)
5	N	0.51	0/2132	2.39	111/2912 (3.8%)
5	R	0.51	0/2132	2.41	121/2912 (4.2%)
5	S	0.51	0/2132	2.40	116/2912 (4.0%)
5	T	0.51	0/2132	2.40	116/2912 (4.0%)
5	Y	0.50	0/2132	2.43	114/2912 (3.9%)
6	I	0.53	0/4856	3.09	312/6646 (4.7%)
6	J	0.53	0/4856	3.03	308/6646 (4.6%)
6	K	0.52	0/4856	3.02	312/6646 (4.7%)
6	O	0.53	0/4856	3.03	302/6646 (4.5%)
6	P	0.70	3/4856 (0.1%)	3.26	317/6646 (4.8%)
6	Q	0.53	0/4856	3.12	316/6646 (4.8%)
6	U	0.53	0/4856	3.04	312/6646 (4.7%)
6	V	0.53	0/4856	3.03	315/6646 (4.7%)
6	W	0.52	0/4856	3.08	313/6646 (4.7%)
6	X	0.53	0/4856	2.38	226/6646 (3.4%)
All	All	0.54	3/104144 (0.0%)	2.74	5967/142603 (4.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	285
2	B	0	206
3	C	1	274
4	D	0	87
4	E	0	98
5	F	0	68
5	G	0	67
5	H	0	68
5	L	0	66
5	M	0	69
5	N	0	67
5	R	0	68
5	S	0	67
5	T	0	67
5	Y	0	68
6	I	0	155
6	J	0	142
6	K	0	149
6	O	0	145
6	P	0	147
6	Q	0	146
6	U	0	145
6	V	0	141
6	W	0	146
6	X	0	135
All	All	1	3076

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	P	56	ALA	CA-CB	25.04	2.05	1.52
6	P	56	ALA	N-CA	-14.68	1.17	1.46
6	P	56	ALA	CA-C	-11.44	1.23	1.52

The worst 5 of 5967 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	W	248	GLU	OE1-CD-OE2	-80.62	26.56	123.30
6	Q	248	GLU	OE1-CD-OE2	-80.09	27.19	123.30
6	K	248	GLU	OE1-CD-OE2	-77.76	29.99	123.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	O	248	GLU	OE1-CD-OE2	-76.08	32.01	123.30
6	U	248	GLU	OE1-CD-OE2	-75.94	32.18	123.30

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	C	315	SER	CA

5 of 3076 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	11	PRO	Mainchain
1	A	13	LEU	Mainchain
1	A	19	ARG	Sidechain
1	A	20	ARG	Sidechain
1	A	5	PHE	Sidechain

## 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	9989	0	9916	381	0
2	B	7935	0	7904	765	0
3	C	9154	0	9092	604	0
4	D	3145	0	3071	587	0
4	E	3145	0	3071	274	0
5	F	2085	0	2019	225	0
5	G	2085	0	2019	232	0
5	H	2085	0	2019	238	0
5	L	2085	0	2019	221	0
5	M	2085	0	2019	226	0
5	N	2085	0	2019	241	0
5	R	2085	0	2019	221	0
5	S	2085	0	2019	235	0
5	T	2085	0	2019	244	0
5	Y	2085	0	2019	168	0
6	I	4758	0	4791	1941	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
6	J	4758	0	4792	1863	0
6	K	4758	0	4793	1854	0
6	O	4758	0	4792	1888	0
6	P	4758	0	4791	2017	0
6	Q	4758	0	4792	1844	0
6	U	4758	0	4792	2037	0
6	V	4758	0	4793	1877	0
6	W	4758	0	4790	1906	0
6	X	4758	0	4797	224	0
All	All	101798	0	101167	13378	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 66.

The worst 5 of 13378 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)
5:N:4:HIS:CG	6:O:586:VAL:HG22	1.19	1.72
6:U:66:ASP:HB2	6:V:232:ALA:CB	1.22	1.68
6:V:193:ILE:HG22	6:W:562:TYR:CE1	1.24	1.68
6:U:193:ILE:HG22	6:V:562:TYR:CE1	1.27	1.67
6:U:459:LEU:CB	6:V:414:GLN:HE22	1.05	1.67

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	1297/1299 (100%)	974 (75%)	214 (16%)	109 (8%)	<a href="#">1</a> <a href="#">13</a>
2	B	1025/1027 (100%)	842 (82%)	136 (13%)	47 (5%)	<a href="#">2</a> <a href="#">24</a>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	1194/1196 (100%)	904 (76%)	201 (17%)	89 (8%)	1	15
4	D	410/412 (100%)	317 (77%)	54 (13%)	39 (10%)	0	11
4	E	410/412 (100%)	307 (75%)	75 (18%)	28 (7%)	1	17
5	F	274/276 (99%)	167 (61%)	66 (24%)	41 (15%)	0	4
5	G	274/276 (99%)	170 (62%)	61 (22%)	43 (16%)	0	4
5	H	274/276 (99%)	170 (62%)	62 (23%)	42 (15%)	0	4
5	L	274/276 (99%)	168 (61%)	62 (23%)	44 (16%)	0	3
5	M	274/276 (99%)	170 (62%)	62 (23%)	42 (15%)	0	4
5	N	274/276 (99%)	170 (62%)	62 (23%)	42 (15%)	0	4
5	R	274/276 (99%)	170 (62%)	61 (22%)	43 (16%)	0	4
5	S	274/276 (99%)	170 (62%)	61 (22%)	43 (16%)	0	4
5	T	274/276 (99%)	169 (62%)	62 (23%)	43 (16%)	0	4
5	Y	274/276 (99%)	169 (62%)	62 (23%)	43 (16%)	0	4
6	I	637/639 (100%)	477 (75%)	105 (16%)	55 (9%)	1	13
6	J	637/639 (100%)	476 (75%)	106 (17%)	55 (9%)	1	13
6	K	637/639 (100%)	479 (75%)	102 (16%)	56 (9%)	1	12
6	O	637/639 (100%)	478 (75%)	102 (16%)	57 (9%)	1	12
6	P	637/639 (100%)	476 (75%)	103 (16%)	58 (9%)	1	12
6	Q	637/639 (100%)	481 (76%)	102 (16%)	54 (8%)	1	13
6	U	637/639 (100%)	477 (75%)	105 (16%)	55 (9%)	1	13
6	V	637/639 (100%)	479 (75%)	100 (16%)	58 (9%)	1	12
6	W	637/639 (100%)	482 (76%)	99 (16%)	56 (9%)	1	12
6	X	637/639 (100%)	482 (76%)	99 (16%)	56 (9%)	1	12
All	All	13446/13496 (100%)	9824 (73%)	2324 (17%)	1298 (10%)	1	11

5 of 1298 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	39	LEU
1	A	40	HIS
1	A	69	SER
1	A	76	GLU
1	A	153	LYS

### 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	1092/1092 (100%)	987 (90%)	105 (10%)	8	29
2	B	875/875 (100%)	788 (90%)	87 (10%)	8	28
3	C	1017/1017 (100%)	926 (91%)	91 (9%)	9	33
4	D	326/326 (100%)	283 (87%)	43 (13%)	4	20
4	E	326/326 (100%)	286 (88%)	40 (12%)	4	22
5	F	228/228 (100%)	199 (87%)	29 (13%)	4	21
5	G	228/228 (100%)	200 (88%)	28 (12%)	4	22
5	H	228/228 (100%)	199 (87%)	29 (13%)	4	21
5	L	228/228 (100%)	200 (88%)	28 (12%)	4	22
5	M	228/228 (100%)	200 (88%)	28 (12%)	4	22
5	N	228/228 (100%)	200 (88%)	28 (12%)	4	22
5	R	228/228 (100%)	199 (87%)	29 (13%)	4	21
5	S	228/228 (100%)	200 (88%)	28 (12%)	4	22
5	T	228/228 (100%)	199 (87%)	29 (13%)	4	21
5	Y	228/228 (100%)	200 (88%)	28 (12%)	4	22
6	I	528/528 (100%)	483 (92%)	45 (8%)	10	36
6	J	528/528 (100%)	486 (92%)	42 (8%)	12	38
6	K	528/528 (100%)	486 (92%)	42 (8%)	12	38
6	O	528/528 (100%)	485 (92%)	43 (8%)	11	37
6	P	528/528 (100%)	488 (92%)	40 (8%)	13	40
6	Q	528/528 (100%)	485 (92%)	43 (8%)	11	37
6	U	528/528 (100%)	485 (92%)	43 (8%)	11	37
6	V	528/528 (100%)	487 (92%)	41 (8%)	12	38
6	W	528/528 (100%)	485 (92%)	43 (8%)	11	37
6	X	528/528 (100%)	484 (92%)	44 (8%)	11	36
All	All	11196/11196 (100%)	10120 (90%)	1076 (10%)	12	29

5 of 1076 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
6	V	143	MET
6	V	558	THR
6	V	133	ASN
6	X	575	MET
5	F	210	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 252 such sidechains are listed below:

Mol	Chain	Res	Type
6	K	233	HIS
6	V	593	GLN
5	N	231	HIS
6	V	456	ASN
6	X	146	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

### 5.7 Other polymers [i](#)

There are no such residues in this entry.



## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

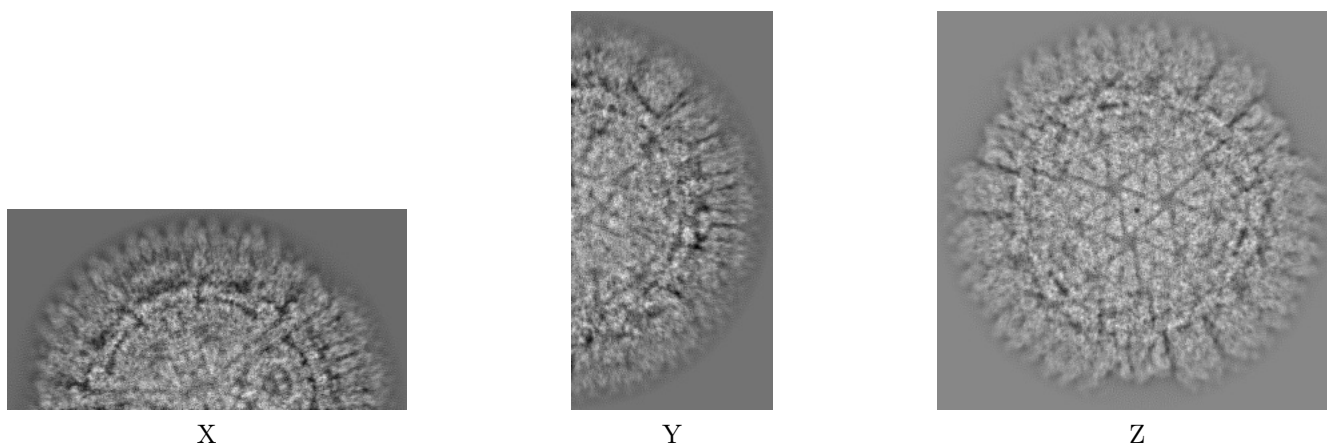
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-1653. 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](#)

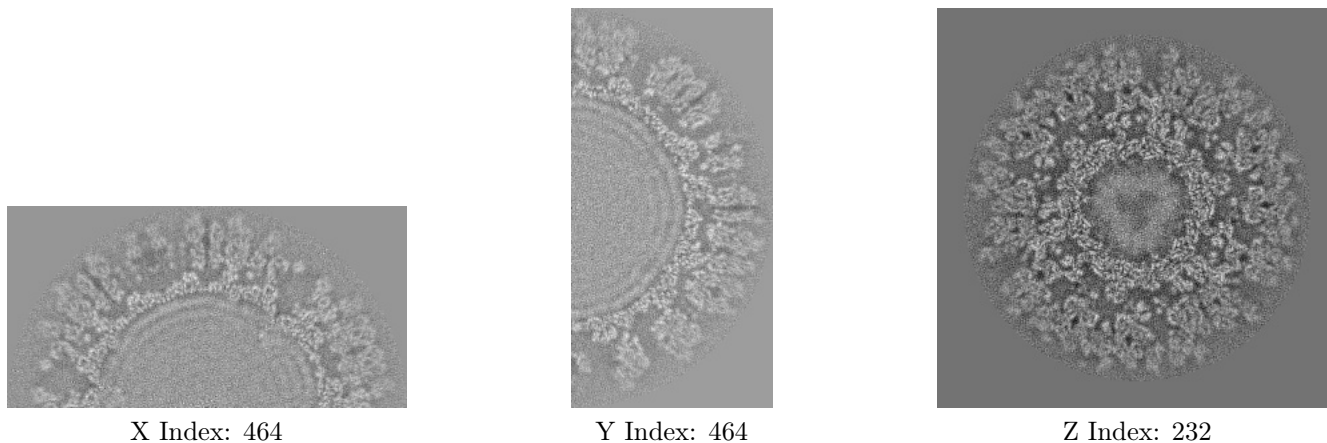
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

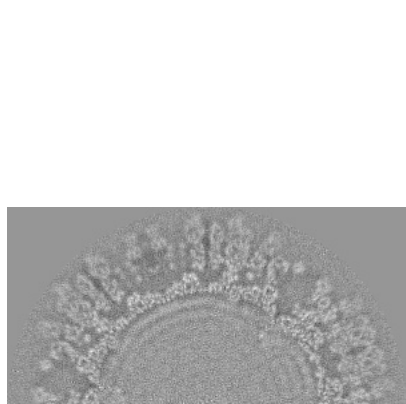
#### 6.2.1 Primary map



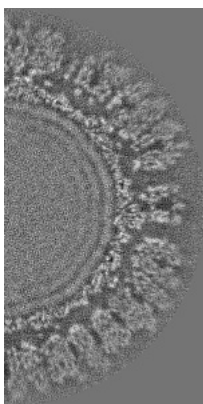
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

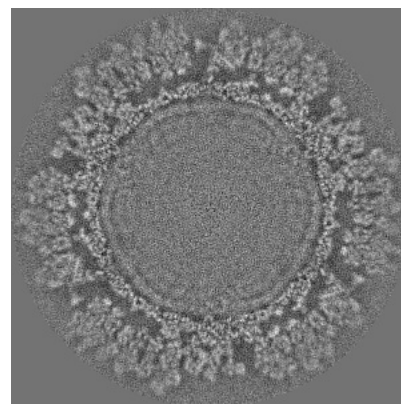
### 6.3.1 Primary map



X Index: 464



Y Index: 501

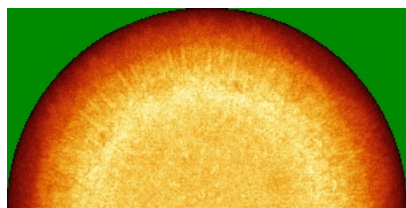


Z Index: 18

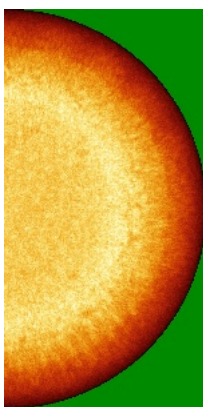
The images above show the largest variance slices of the map in three orthogonal directions.

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

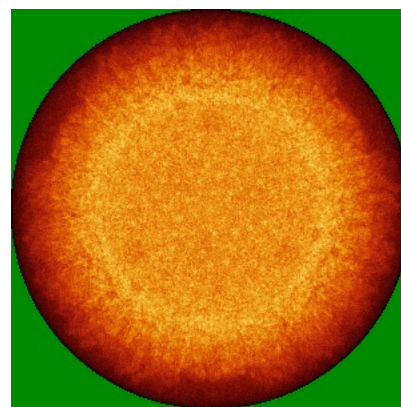
### 6.4.1 Primary map



X



Y

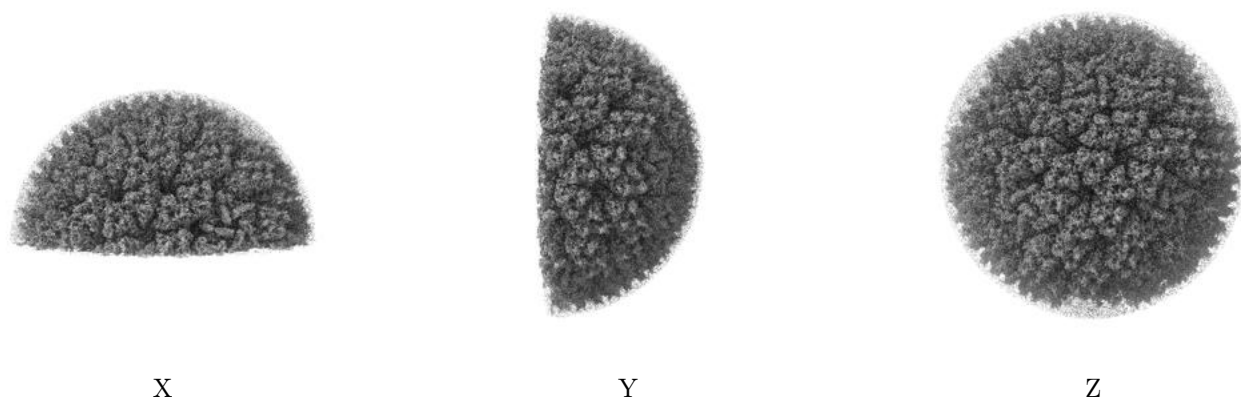


Z

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

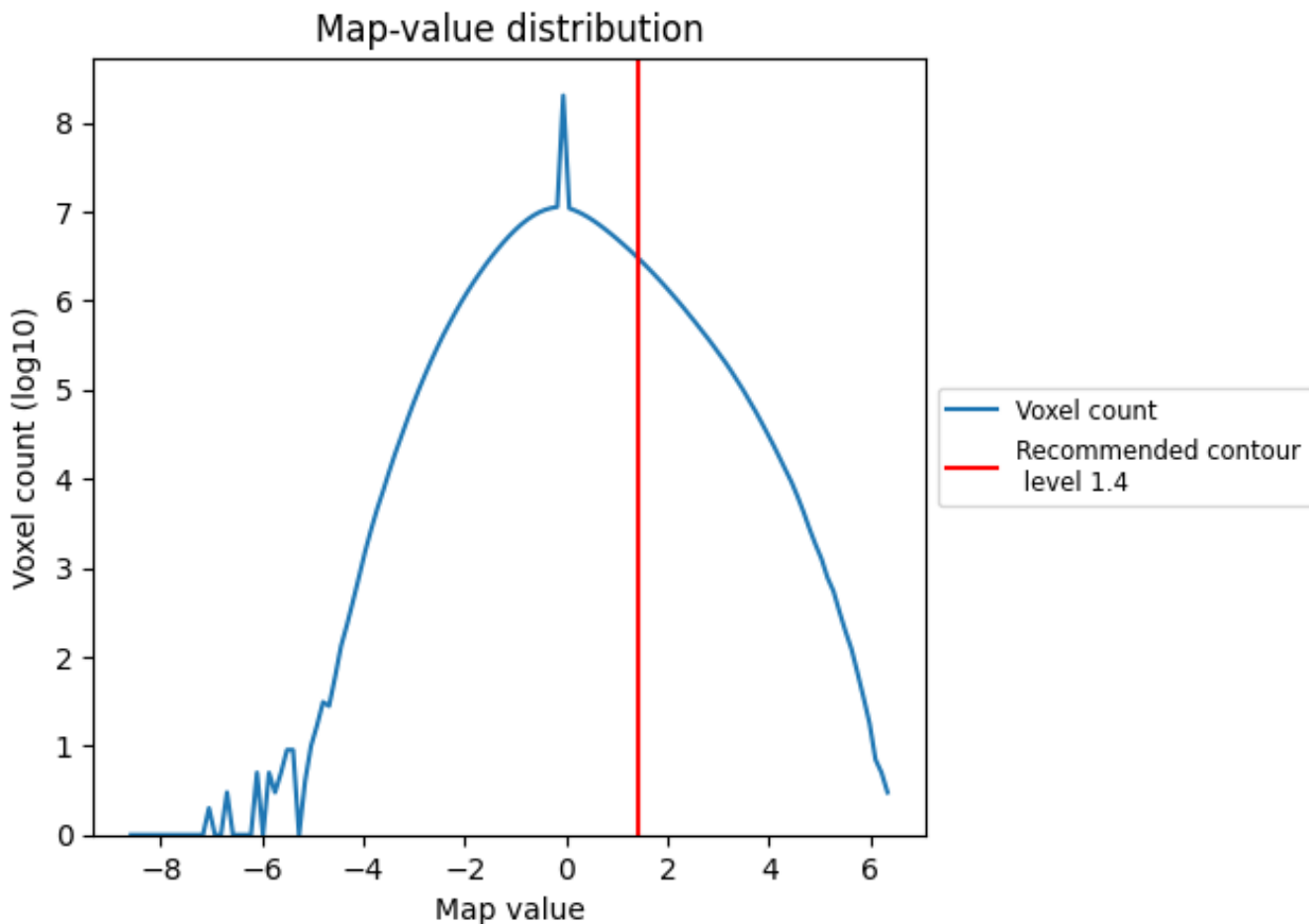
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

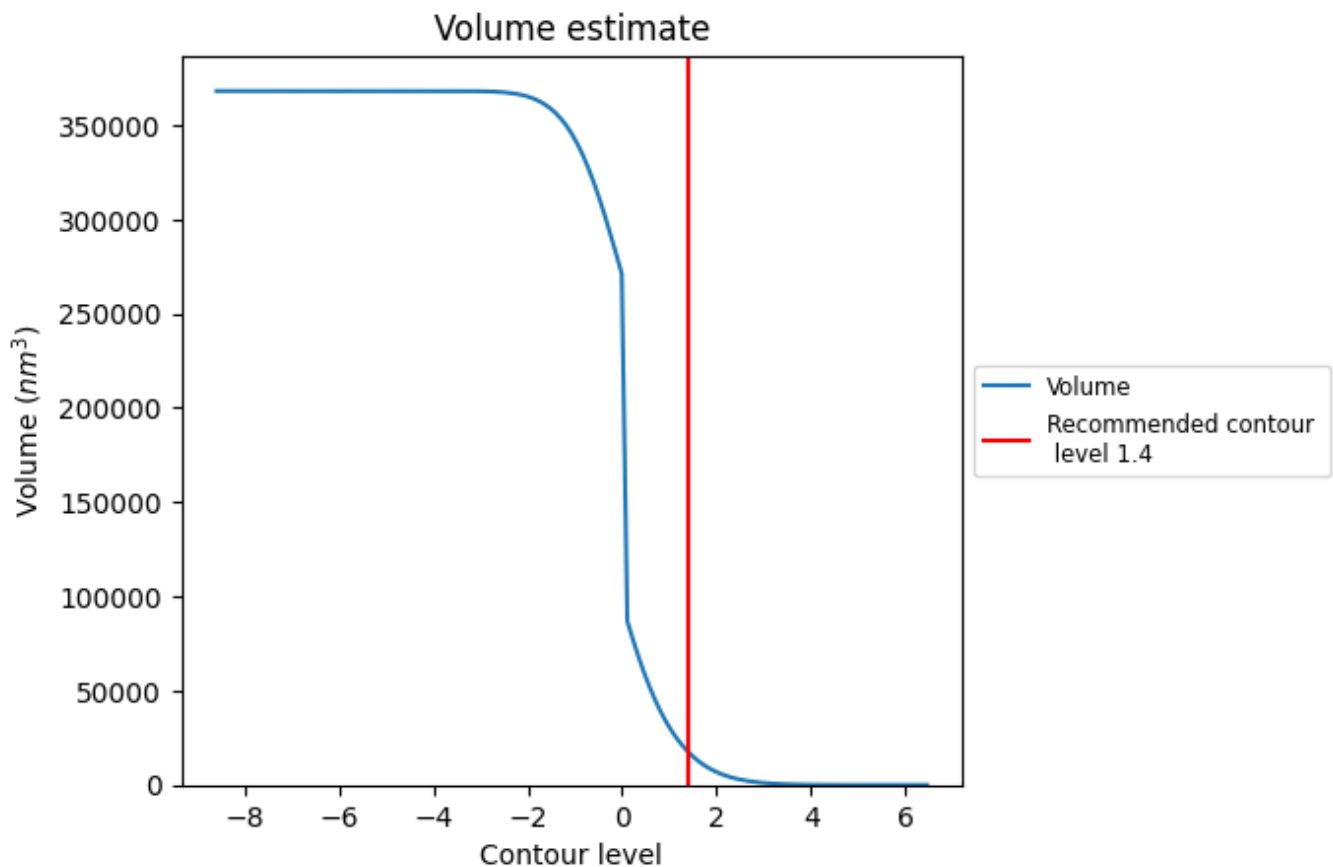
This section contains the results of statistical analysis of the map.

### 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 17524 nm<sup>3</sup>; this corresponds to an approximate mass of 15830 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](#)

This section was not generated. The rotationally averaged power spectrum is only generated for cubic maps.

## 8 Fourier-Shell correlation

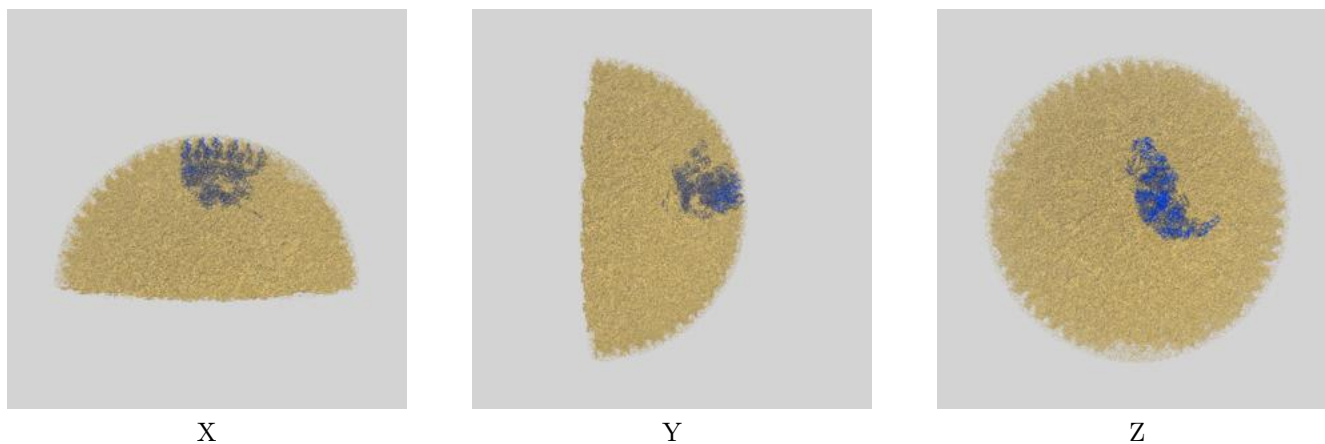
This section was not generated. No FSC curve or half-maps provided.

## 9 Map-model fit [i](#)

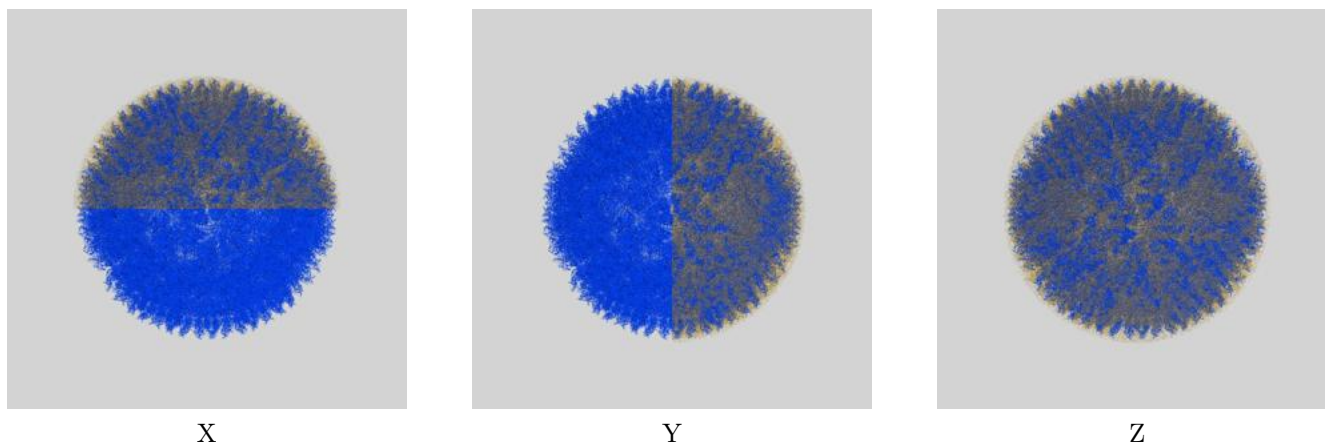
This section contains information regarding the fit between EMDB map EMD-1653 and PDB model 3K1Q. Per-residue inclusion information can be found in section 3 on page 6.

### 9.1 Map-model overlays

#### 9.1.1 Map-model overlay [i](#)



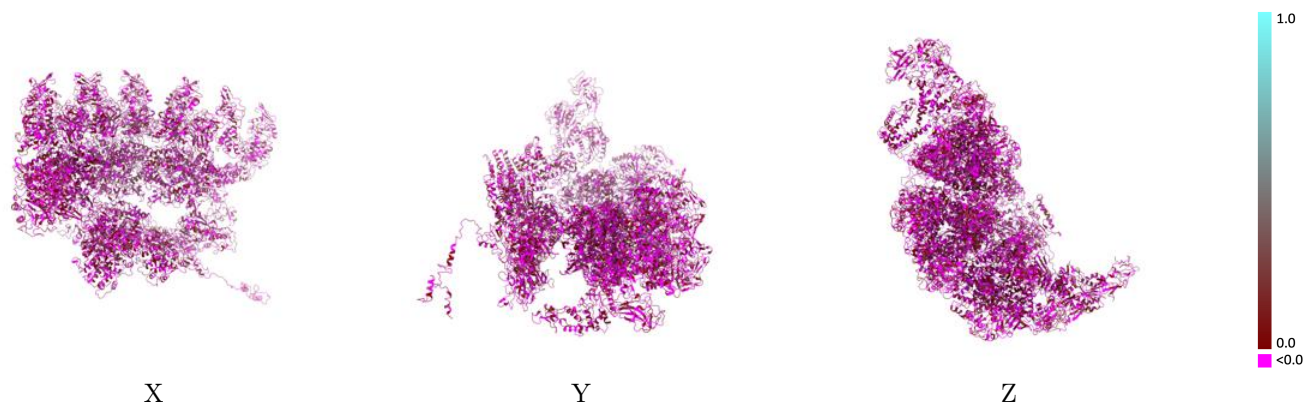
#### 9.1.2 Map-model assembly overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 1.4 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.

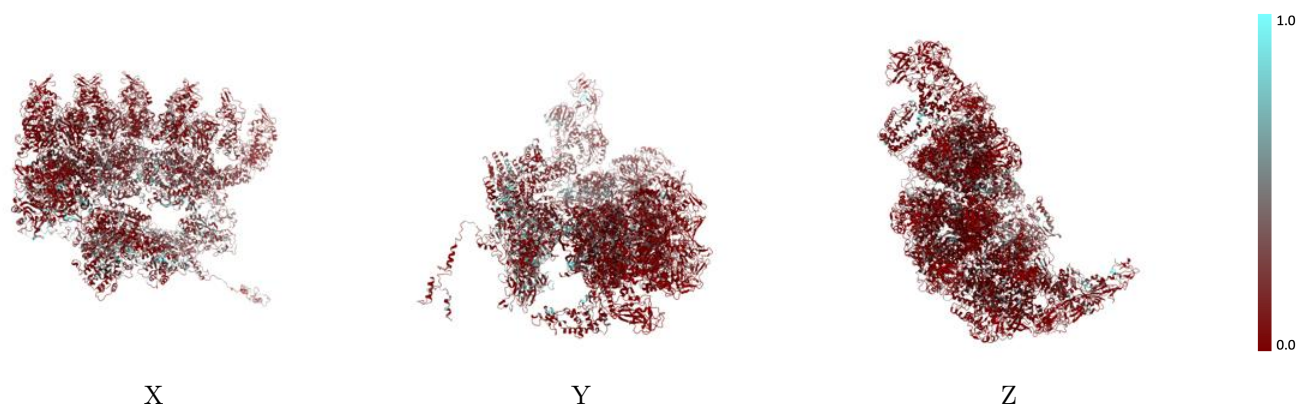


## 9.2 Q-score mapped to coordinate model [i](#)



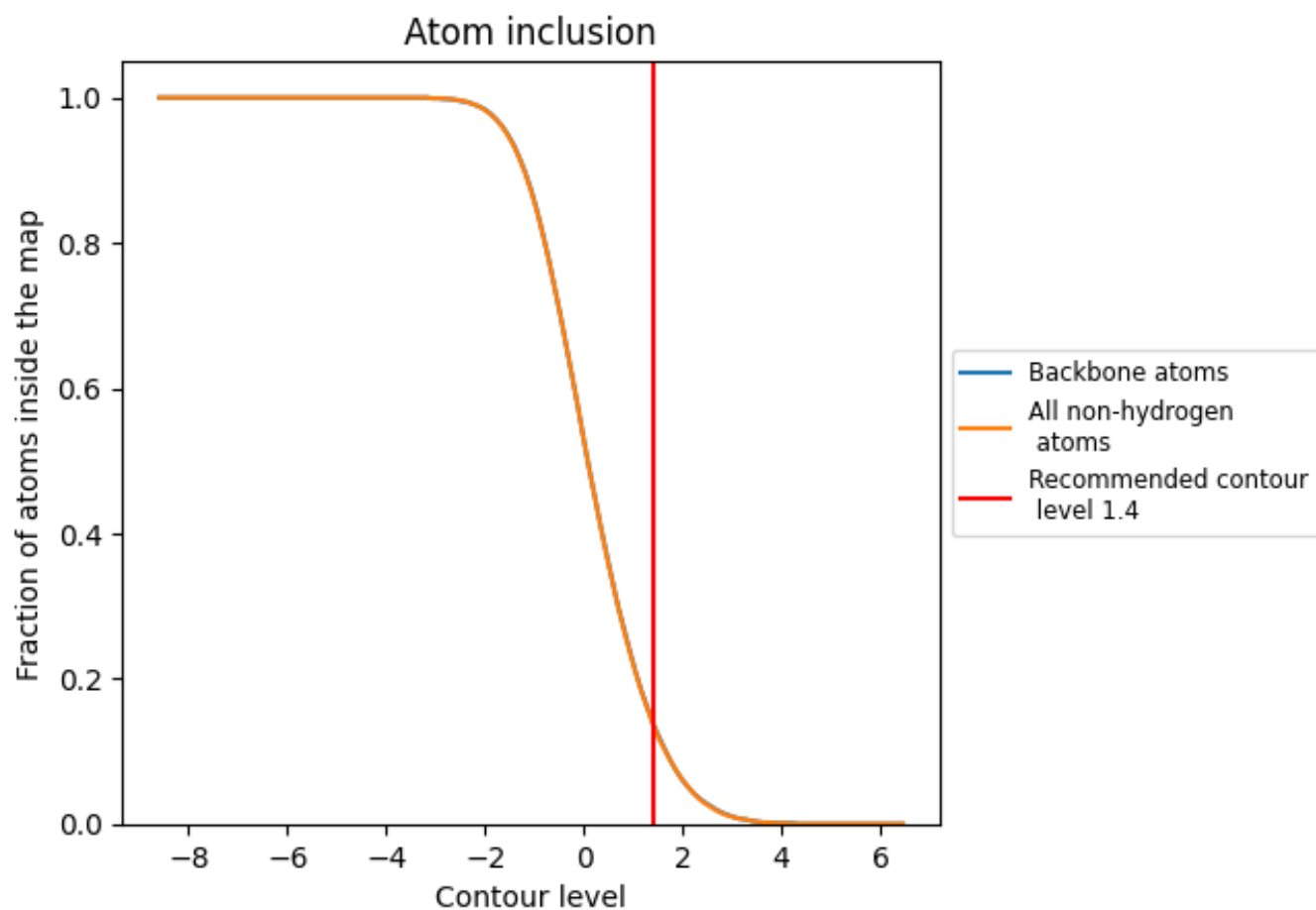
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (1.4).





















































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 14% of all backbone atoms, 14% 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 (1.4) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.1370	 -0.0000
A	 0.1560	 0.0070
B	 0.2250	 0.0040
C	 0.2280	 0.0010
D	 0.1740	 -0.0070
E	 0.2600	 0.0160
F	 0.0820	 0.0040
G	 0.0690	 0.0000
H	 0.0710	 0.0180
I	 0.1230	 -0.0100
J	 0.1500	 -0.0010
K	 0.1500	 0.0060
L	 0.0590	 0.0070
M	 0.0640	 -0.0050
N	 0.0020	 0.0050
O	 0.1100	 0.0000
P	 0.1070	 0.0080
Q	 0.1170	 -0.0080
R	 0.0750	 -0.0150
S	 0.0820	 0.0050
T	 0.0920	 0.0000
U	 0.1260	 -0.0060
V	 0.1260	 -0.0130
W	 0.1470	 -0.0100
X	 0.0970	 -0.0090
Y	 0.0040	 -0.0050

