

**Supplemental Figure 2. List of all amino acid changes associated with major subtypes.**

<b>AG80</b>		<b>78V</b>		<b>AG80/78V</b>		<b>CABV</b>	
Position	Amino Acid	Position	Amino Acid	Position	Amino Acid	Position	Amino Acid
98	Ser	98	Ser	200	Ser	76	Asn
111	Asn	102	Arg	203	Val	111	Gly
124	Thr	111	Asn	228	Met	114	Gln
128	Ileu	132	Ser	239	Ileu	116	Leu
232	Phe	176	Val	428	Val	124	Gln
237	ser	238	Ser	434	Lys	125	Glu
459	Ala	305	Ser	458	Thr	127	Ser
491	Thr	1876	Gly	472	Met	144	Asp
495	Val	1955	Ser	498	Arg	147	Ileu
1000	Gln	2376	Val	569	Lys	239	Ileu
1192	Ser	2471	His	584	Pro	269	Thr
1219	Gln	2696	thr	779	Tyr	299	Thr
1431	Gln	3163	Met	786	Val	403	Asp
1877	Leu	3307	Leu	1651	Asp	440	Val
1878	Ala	3435	MET	1767	Ileu	514	Thr
1932	Arg	3796	Ileu	1859	Ser	610	Thr
2376	Ser			2290	Ala	661	Gly
2591	Ileu			2590	Val	738	Lys
2697	Ala			2720	Gln	750	Ileu
2706	Lys			3129	Val	779	Tyr
2795	Thr			3174	Gly	873	Gln
2935	Thr			3351	Cys	976	Glu
3232	Lys			3564	THr	1000	Asn
3245	Leu			117	Glu	1179	Thr
3412	Val					1701	Ser
3514	Ileu					1771	Asp
3793	Val					1813	Ala
						1913	Ala
						1942	Ser
						1950	Ileu
						2048	Asp
						2290	Cys
						2577	Ser
						2590	Ileu
						2609	Thr
						2706	Ileu
						2709	Ala
						3259	Asn
						3355	Leu
						3424	Ileu
						3435	Phe
						3793	Thr

71D	
Position	Amino Acid
227	Val
409	Glu
465	Lys
466	Ser
750	Leu
1871	Ileu
1942	THR
1950	Cys
1990	Arg
2141	Thr
3039	Val
3146	Ala
3218	Lys
3477	Ser
3713	Ileu

MUCV	
Position	Amino Acid
81	Val
85	Arg
94	Tyr
239	Ileu
661	Thr
1942	Pro
1989	Arg
2048	Asn
2709	Val

TONV	
Position	Amino Acid
75	Asn
98	Ser
495	Thr
513	Met
661	Asn
663	His
705	Arg
750	Thr
761	Asp
1118	Phe
1771	Gln
1913	Ser
2048	His
2618	Leu
2709	Asp
3326	Ileu
3477	Val
3514	Ala

TONV/MUCV	
Position	Amino Acid
162	Ileu
353	Glu
508	Ileu
643	Ileu
978	Thr
1867	Leu
1990	Lys
2577	His
2935	Ala
3044	Val
3383	Phe
3793	Leu

TONV/MUCV/71D	
Position	Amino Acid
124	Glu
440	Val
514	Val
582	Glu
758	Lys
764	Ileu
804	Ileu
976	Glu
1179	Thr
1195	Lys
1384	Ser
1524	Phe
1810	Val
1813	Gln
1814	Gly
1861	Asp
1862	Ileu
1866	Ala
2163	Met
2290	Ser
2591	Thr
2618	Val
2707	Ala
3131	Asp
3174	Ser
3175	Ala
3346	Val
3486	Arg
3518	Pro
3564	ser
3627	Val
3653	Leu
3752	Ser
3796	Val
3804	Leu

TONV/MUCV/71D	
Position	Amino Acid
3161	Thr
3163	Lys
3164	Thr
3174	Ala
3200	Met
3268	Gly
3324	Met
3351	Ala
3355	Ala
3521	Arg
3594	Val
3595	Ala
3646	Arg
3729	Thr

PIXV	
Position	Amino Acid
98	Ser
104	Ser
106	Ala
117	Thr
144	Ser
146	His
147	Ileu
167	Glu
203	Ser
236	Thr
237	Asp
239	Ileu
253	Glu
271	Ser
386	Ileu
408	Met
471	Met
491	Arg
501	Thr
505	Ala
508	Glu
644	Asn
661	Glu
673	Arg
683	His
761	Asn
786	Val
830	Tyr
873	Pro
974	Ala
1000	Ala
1022	Arg
1206	Ileu
1794	Asp
1810	Ser

PIXV	
Position	Amino Acid
1813	Ser
1815	Val
1850	Ileu
1857	Val
1859	Gly
1860	Pro
1862	Val
1867	Ileu
1871	Gln
1877	Ileu
1879	Val
1921	Leu
1922	Pro
1980	Leu
2191	Thr
2290	Thr
2376	Leu
2616	Asp
2697	Gln
2699	Arg
3161	Thr
3163	Lys
3164	Thr
3174	Ala
3200	Met
3268	Gly
3324	Met
3351	Ala
3355	Ala
3521	Arg
3594	Val
3595	Ala
3646	Arg
3729	Thr

VEEV ID	
Position	Amino Acid
133	Met
424	Arg
1683	Gly
1698	THR
1704	Ileu
1739	Leu
1772	Ileu
1781	Ser
1781	Gln
1867	Val
1876	Thr
1922	Thr
1934	Leu
2056	Gln
2704	Lys
2706	Gly
2729	Ala
2945	Val
3655	Ser

EVEV	
Position	Amino Acid
133	Val
256	Lys
337	Ileu
417	Leu
466	Asn
500	Ala
656	Arg
750	Thr
887	Gly
974	Ser
986	Thr
1735	Gly
1739	Ser
1763	Arg
1861	Thr
1922	Ileu
1936	Leu
2694	Ser
2709	Arg
2715	Glu
3154	Leu
3260	Tyr
3338	Thr
3412	Thr
3531	Ala
3655	Leu
3793	Ser

VEEV IE	
Position	Amino Acid
94	Phe
121	Glu
140	Thr
143	Phe
232	Phe
424	Arg
475	Pro
514	Ser
574	Thr
610	Gln
656	Arg
664	Glu
871	Asp
872	Ser
954	Lys
976	Asp
1150	Ala
1179	Ser
1191	Asp
1219	Gln
1299	Phe
1547	Met
1660	Ala
1668	Ala
1670	Asn
1778	Ala
1794	Arg
1815	Ser
1857	Asp
1859	Ileu
1860	Ser
1935	Leu
2257	Lys
2290	Asp
2301	Ileu
2437	Arg
2458	Met
2608	Glu
2619	Ser
2704	Gly
2714	Lys
2715	Leu
2716	Val
2731	Gly
2903	Ser
2966	Gly
3053	Val
3163	Gln
3200	Thr
3229	Val
3263	Phe
3274	Ala
3309	Ser
3355	Val
3363	Ileu
3424	Ala

VEEV IE	
Position	Amino Acid
3481	Val
3531	Ser
3564	Val
3625	Lys
3690	Tyr
3869	Ileu

VEEV ID/II	
Position	Amino Acid
85	Arg
98	Thr
425	Arg
431	Ileu
475	Lys
492	Cys
569	Lys
683	Thr
870	Lys
886	Thr
1040	Glu
1147	Leu
1150	Asn
1154	Gln
1206	Val
1285	Ser
1431	Lys
1444	Ser
1451	THr
1479	Met
1484	Ala
1641	Gln
1651	Ala
1686	Glu
1696	Gln
1778	Pro
1812	Ileu
1866	Ser
1889	ser
1955	Val
1957	Thr
2091	Ala
2290	Asn
2380	Arg
2412	Ala
2471	Gly
2577	Leu
2608	Lys
2670	Thr
2698	Ala
2701	Lys
2702	Gln
2708	Gln
2713	Lys
2714	Asn
2720	Ala
2726	Asn
2959	Ala
2960	Val
3119	Ala
3121	Gln
3192	Lys
3218	Ala
3231	Ala
3233	Gly
3271	Asp

VEEV ID/II	
Position	Amino Acid
3274	His
3349	Val
3564	Leu
3593	Val
3698	Ala

VEEV ID/IE/II	
Position	Amino Acid
225	Met
240	Leu
270	Gln
441	Val
444	Asn
455	Ileu
461	Glu
474	Glu
551	Ala
554	Asp
615	Gln
643	Thr
663	His
693	Asp
738	Lys
758	Lys
760	Lys
804	Ileu
805	Arg
940	Thr
978	Thr
993	Arg
1118	Tyr
1174	Glu
1527	Ser
1564	Val
1657	Lys
1737	Ileu
1779	Ser
1810	Leu
1862	Leu
2096	Gln
2356	Ileu
2634	Pro
3042	Thr
3101	Asn
3377	Met
3441	Val
3477	Pro
3491	Val
3504	Met
3520	Thr
3661	Ser
3678	Ala
3713	Thr
3804	Ileu