

**Table S1. An overview of the complete protein sequences used for analyses**

	A/H3N2			A/pH1N1			A/epH1N1			B			
Segment	Protein	# Complete	Length	Protein	# Complete	Length	Protein	# Complete	Length	Protein	# Complete	Length	
1 PB2	PB2	13124	759	PB2	6508	759	PB2	1430	759	PB2	7891	770	
2 PB1	PB1	11459	757	PB1	6453	757	PB1	1436	757	PB1	7889	752	
	PB1-F2	10446	90				PB1-F2	1244	57				
	PB1-N40	11466	718	PB1-N40	6443	718	PB1-N40	1438	718				
3 PA	PA	13113	716	PA	6512	716	PA	1437	716	PA	7969	726	
	PA-N155	11373	562	PA-N155	6497	562	PA-N155	1434	562				
	PA-N182	11416	535	PA-N182	6044	535	PA-N182	1431	535				
	PA-X	13481	252	PA-X	6739	232	PA-X	1383	252				
4 HA	HA	13280	566	HA	6626	566	HA	1427	565	HA	Vic	4790	584
										Yam	2684	585	
5 NP	NP	13213	498	NP	6550	498	NP	1447	498	NP	7943	560	
6 NA	NA	13241	469	NA	6581	469	NA	1291	470	NA	6681	466	
										NB	6665	100	
7 MP	M1	11598	252	M1	6556	252	M1	1435	252	M1	6627	248	
	M2	11580	97	M2	6546	97	M2	1431	97	BM2	3144	109	
8 NS	NS1	11142	230	NS1	6516	219	NS1	1225	230	NS1	4490	281	
	NS2	11564	121	NS2	6523	121	NS2	1964	121	NS2	4502	122	
Year Range	1968-2018			2009-2017			1995-2017			1993-2016			