Supplementary Table 2

		99N	99S	00N	00S	01N	01S	02N	02S	03N	03S	04N	04S	05N	05S	06N	06S	07N	07S	08N	08S	09N	09S	10N	10S	11N	11S	12N	12S	13N	13S	14N	14S	15N	15S
HA	G5V	0	0	**0.828**	0.284	0.264	0.152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	K92T	0	0	**0.828**	0.284	0.264	0.152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	D271N	0	0	**0.824**	0.284	0.264	0.152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Q33H	0	0	**0.808**	0.284	0.092	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	R50G	0	0	0	**0.6**	0.58	0.236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	S199P	0	0	0	**0.6**	0.58	0.236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	P273S	0	0	0.084	**0.6**	0.58	0.248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	S247C	0	0	0	**0.58**	0.58	0.236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A106V	0	0	0	0	0.092	0.312	**0.94**	0.888	0.232	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	N144D	0	0	0	0	0	0.28	**0.928**	0.888	0.108	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	S186G	0	0.072	0	0	0.092	0.312	**0.924**	0.888	0.232	0.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	R50G	0	0	0.008	0.096	0.064	0.288	0.052	0.112	**0.768**	0.904	0.956	1	0.976	0.968	0.5	0.16	0.28	0.056	0.004	0	0	0	0	0.008	0	0	0	0	0	0	0	0	0	0
	E83K	0	0	0	0	0	0.048	0.044	0.112	**0.768**	0.98	1	1	1	0.992	0.96	1	1	0.972	0.82	0.944	1	1	1	1	1	0.992	0.976	0.984	0.996	0.984	0.988	0.976	0.98	0.996
	A131T	0	0	0	0	0	0	0.024	0.072	**0.768**	0.98	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.976	0.992	1	1	0.996	0.996	1	0.992
	S186G	0	0	0	0	0	0	0.032	0.112	**0.768**	0.98	1	1	1	1	1	1	0.988	1	0.972	1	0.984	1	1	1	1	1	0.976	0.976	0.992	0.992	0.968	0.996	1	1
	V202I	0	0	0	0	0	0.048	0.044	0.112	**0.768**	0.98	1	1	1	1	1	1	1	1	1	1	0.992	1	1	1	1	0.976	1	1	0.992	0.996	0.996	0.992	1	1
	W222R	0	0	0	0	0	0.048	0.044	0.112	**0.768**	0.98	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.976	1	1	1	1	0.996	0.996	1	1
	G225D	0	0	0.008	0.096	0.064	0.288	0.052	0.112	**0.768**	0.98	1	1	0.96	0.436	0.084	0	0.012	0	0	0	0	0	0	0.008	0	0	0	0	0	0	0	0	0	0
	L25I	0	0	0	0	0	0	0	0.048	**0.744**	0.98	1	0.936	0.992	0.952	0.996	1	1	1	0.984	1	1	0.992	0.744	0.992	0.984	1	0.972	0.992	1	1	0.984	0.996	1	0.98
	H75Q	0	0	0	0	0	0	0	0.048	**0.744**	0.98	0.988	1	1	1	1	1	1	0.992	1	1	1	0.992	0.964	1	1	0.976	1	1	0.992	0.988	0.996	1	1	1
	H155T	0	0	0	0	0	0	0	0.048	**0.744**	0.98	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.976	1	1	1	1	0.996	0.996	1	1
	Q156H	0	0	0	0	0	0	0	0	**0.612**	0.98	1	1	1	1	0.968	1	0.988	1	0.992	1	1	1	1	1	1	0.976	0.992	1	1	1	0.996	0.996	1	1
	N126D	0	0	0	0	0	0	0	0	0	**0.756**	0.624	0.008	0.004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Y105H	0	0	0	0	0	0	0	0	0	**0.68**	0.008	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Y159F	0	0	0	0	0	0	0	0	0	0	0.052	0.184	**0.976**	0.984	1	1	1	1	1	0.988	1	1	0.992	1	0.992	1	0.976	0.992	1	1	0.744	0.26	0.132	0.012
	S189N	0	0	0	0	0	0	0	0	0	0	0.104	0.264	**0.976**	0.984	1	1	1	1	1	1	1	0.96	0.188	0.024	0.008	0	0	0	0	0	0	0	0	0
	K145N	0	0	0	0	0	0	0	0	0	0	0.004	**0.876**	0.968	0.62	0.992	1	0.984	1	1	1	0.972	1	1	1	0.976	0.368	0.244	0.36	0.104	0.004	0	0	0	0
	S227P	0	0	0	0	0	0	0	0	0	0.132	0.2	**0.764**	0.94	1	1	1	1	1	1	1	1	1	1	1	1	0.976	1	1	1	1	0.996	0.996	1	1
	V226I	0	0	0	0	0	0	0	0	0	0	**0.664**	0.904	1	1	1	1	1	1	1	1	1	1	1	1	1	0.976	1	1	1	1	0.996	0.996	1	1
	S193F	0	0	0	0	0	0	0	0	0	0	0	0	0.04	**0.564**	0.916	1	0.988	1	1	1	1	1	0.992	1	1	0.976	1	1	1	0.988	0.988	1	1	1
	D225N	0	0	0	0	0	0	0	0	0	0	0	0	0.04	**0.564**	0.856	0.84	0.96	1	0.964	0.756	0.86	0.992	1	0.96	0.996	0.992	0.944	0.96	0.988	0.992	0.684	0.208	0.132	0.012
	G50E	0	0	0	0	0	0	0	0	0	0	0	0	0	0.024	0.032	0.492	**0.84**	0.012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G50E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0	**0.62**	0.944	0.996	1	1	1	1	0.98	0.996	0.996	0.976	1	1	0.992	0.996	0.996	1	1

K140I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0	**0.62**	0.944	0.988	1	0.948	0.988	1	0.98	0.976	0.992	0.932	0.948	1	0.984	0.996	0.996	1	1
Q261R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0	**0.58**	0.912	0.984	0.964	0.984	0.94	0.848	0.96	0.988	0.972	0.976	1	1	1	0.964	0.98	0.904	0.884
K173Q	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.044	**0.524**	0.816	0.948	1	1	0.992	1	1	0.956	1	1	1	0.996	0.996	1	1
E62K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.052	**0.7**	0.576	0.052	0.044	0.004	0	0	0	0	0	0	0	0	0
K158N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.052	**0.7**	0.576	0.052	0.044	0.004	0	0	0	0	0	0	0	0	0
N189K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	**0.7**	0.576	0.052	0.044	0.004	0	0	0	0	0	0	0	0	0
N144K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	**0.696**	0.576	0.052	0.044	0.004	0	0	0	0	0	0	0	0	0
V213A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	**0.564**	0.128	0.016	0.032	0	0	0	0	0	0	0	0	0	0
P194L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	**0.56**	0.128	0.016	0.032	0	0	0	0	0	0	0	0	0	0
K158N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.112	0.4	**0.94**	0.956	0.996	0.976	1	1	1	0.944	0.996	1	1	
N189K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.112	0.4	**0.94**	0.956	0.996	0.976	1	1	1	0.996	0.996	1	1	
T212A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.112	0.356	**0.86**	0.596	0.936	0.832	0.784	0.964	1	0.996	0.996	1	1	
N45S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.112	0.4	**0.852**	0.8	0.876	0.732	0.504	0.104	0.016	0	0.008	0	0	
D53N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.132	0.352	**0.668**	0.356	0.236	0.348	0.096	0.004	0	0	0	0	0	
I230V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.092	0.352	**0.668**	0.356	0.236	0.328	0.096	0.004	0	0	0	0	0	
Y94H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.044	0.352	**0.664**	0.356	0.236	0.348	0.096	0.004	0	0	0	0	0	
E280A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.144	0.344	**0.62**	0.356	0.236	0.348	0.096	0.004	0	0	0	0	0	
N312S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.204	0.48	0.152	**0.64**	0.672	0.6	0.884	0.98	0.988	0.988	1	1	
V223I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.016	**0.632**	0.732	0.632	0.896	0.996	0.996	0.996	1	1	
A198S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	**0.624**	0.672	0.608	0.884	0.988	0.988	0.988	0.988	0.992	
N145S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004	**0.572**	0.556	0.292	0.012	0.012	0	0.008	0	0	
S45N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.02	0.164	0.348	**0.884**	0.984	0.996	0.98	1	1	
T48I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0.164	0.348	**0.884**	0.984	0.996	0.988	1	1	
N278K	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.028	0.164	0.348	**0.884**	0.996	0.936	0.996	1	1	
S157L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0.164	0.316	**0.872**	0.936	0.84	0.864	0.872	0.988	
N145S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004	0.12	**0.836**	0.984	0.94	0.972	1	0.992	
Q33R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0.156	0.336	**0.808**	0.932	0.888	0.976	1	1	
N53D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004	0.096	**0.52**	0.72	0.596	0.448	0.176	0.012	
T128A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004	0.02	0.344	**0.7**	0.604	0.44	0.184	0.02	
R142G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.004	0.02	0.344	**0.7**	0.624	0.448	0.184	0.02	
N225D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.18	**0.512**	0.816	0.98	
Q311H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176	**0.512**	0.816	0.98	
L3I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176	0.488	**0.816**	0.98	
N144S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.176	0.492	**0.816**	0.98	
F159Y	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.112	0.42	**0.816**	0.98	
K160T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.164	0.42	**0.772**	0.928	