

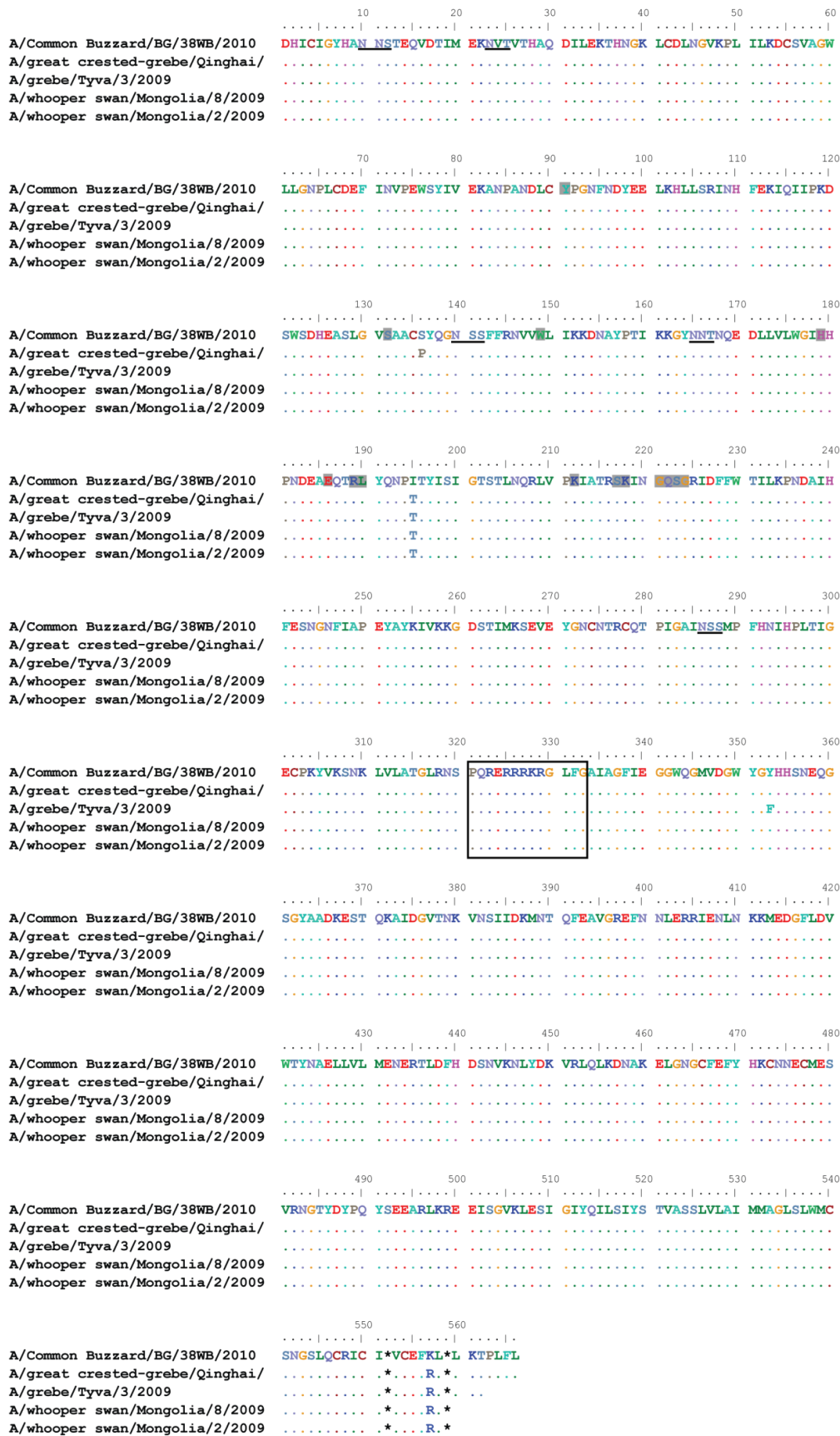
Spread of Influenza Virus A (H5N1) Clade 2.3.2.1 to Bulgaria in Common Buzzards

Technical Appendix

Technical Appendix Table. Amino acid substitutions in A/common buzzard/Bulgaria/WB38/2010

Gene segment	Amino acid substitution	Comment
HA	T195I*	
NA	V321I*	
	D398N*	
PB1	N158S	Also in other viruses isolated in Tyva in 2009 and 2010.
	D464N*	
	S573T*	
PB1-F2	R37Q*	
PB2	V231I	Also in closely related viruses isolated in Tyva and Mongolia in 2009 and 2010 and in those from Hong Kong and Qinghai.
	T339M	Also in A/duck/Hunan/8/2008.
	Q628L*	
	K718R*	
PA	V44I*	
	T263A	Also in closely related viruses isolated in Tyva and Mongolia in 2009.
NS1	H17Y*	
	D207N*	
	D70	Also in closely related viruses isolated in Qinghai, Tyva, and Mongolia in 2009 and 2010.
	V112	
	M123	
	V128	
S171		
NS2	L35	
NP	V33I	I33 is a characteristic of human viruses and swine viruses.
	R293K	K293 is a characteristic of human viruses.
	N395T	Also in closely related viruses isolated in Tyva and Mongolia.
	S450N	N450 is a characteristic of North American avian influenza strains.
M1	V115	Characteristic of avian viruses.
	T137	
M2	V28	Characteristic of human viruses (1).

*Amino acid substitutions that are not characteristic of other closely related viruses (i.e., unique mutations). HA, hemagglutinin; NA, neuraminidase; PB, polybasic; PA, protective antigen; NS, nonstructural; NP, nucleoprotein; M, matrix.



Technical Appendix Figure. Comparison of deduced amino acid sequences of the hemagglutinin protein of A/common buzzard/Bulgaria/38WB/2010 and closely related sequences of 4 other viruses

in the National Center for Biotechnology Information database (A/great crested grebe/Qinghai/1/2009, A/grebe/Tyva/3/2009, A/whooper swan/Mongolia/8/2009, and A/whooper swan/Mongolia/2/2009). Identical amino acids are represented by dots. Potential glycosylation sites are shown as underlined 3-letter sequences. The conserved residues of the receptor-binding site are shaded, and the cleavage polybasic motif is boxed.

Reference

1. Shaw M, Cooper L, Xu X, Thompson W, Krauss S, Guan Y, et al. Molecular changes associated with the transmission of avian influenza A H5N1 and H9N2 viruses to humans. *J Med Virol.* 2002;66:107–14. [PubMed http://dx.doi.org/10.1002/jmv.2118](http://dx.doi.org/10.1002/jmv.2118)